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on the History of Landscape Architecture

XXII

Environmentalism in Landscape Architecture

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edited by Michel Conan

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Introduction: Contested Claims and Creative Tensions

Michel Conan

Environmentalism appears to have become central to American culture. Surveys suggest that three out of four people in the United States consider themselves environmentalists. The American Society of Landscape Architects (ASLA) has pledged the commitment of all its members to the cause of environmentalism. Yet environmentalism remains a hotly debated topic: there is no agreement as to what it really is or should be. More than forty years after public interest signaled the first signs of a new era in environmental thinking, landscape architects as well as the larger public are caught in practical, ethical, and metaphysical disputes—disputes often characterized more by passion than by clarity.

Relationships between landscape architecture and environmentalism encompass a set of vital issues for landscape architects. The call for papers for the Dumbarton Oaks symposium that would examine these relationships proposed ten very broad questions, deliberately leaving the parameters of the subject open and fluid. One commentator even noted that each of these questions would merit an entire conference to explore fully. And yet there was a sense that the overall topic caught historians and students of landscape by surprise. Definitive and persuasive answers proved hard to come by. Many responses—conveyed with an urgency that confirmed the timeliness of the symposium—took the form of proposals for new design approaches and for new relationships between the practice of landscape architecture and environmentalism. Others attempted to analyze the present state of thinking about environmentalism and landscape architecture through a historical lens. The contributions that follow deserve attention from landscape students and designers alike, not the least because they challenge us to further research.

This volume cannot claim to achieve anything close to a comprehensive survey of issues raised by encounters between environmentalism and landscape architecture. It does not touch on many burning issues discussed during the past few years, and it does not arbitrate current debates. This may suggest that the volume is rather limited, but that is far from the case. The authors of each paper confront the topic freshly, reframing questions to allow self-reflection instead of strategic dispute.

Many of these papers cast the present predicaments of landscape architecture in a larger historical perspective. In so doing, they reveal changing perspectives about environmentalism, a pattern of recurrent issues in landscape architecture, and the impact of social and cultural changes upon the course of design trends. The papers unfold a historical panorama that, despite all that is still left in shadow, provides a new horizon for discussion. The first task of this introduction is to give an overview of each author's contribution while highlighting some of the reflections prompted by each paper. Beyond the specific interest of each paper, many lines of discussion seem to jump from one paper to the next. Discussions during the symposium in May 1998 were unusually intense, testimony to the intersecting interests of the speakers and the intensity of their engagement with them, as well as the responsiveness of the audience. While, unfortunately, such lively exchanges cannot be represented in this volume, the revised papers often show the consequences of this reflection and rethinking. It is our hope that this volume can offer something similar for each reader, engaged in an evolving and involving debate, and that he or she may find personal lines of interest not only in individual essays but also in the fabric of the whole volume. To bring into focus some topics for future research, this introduction will conclude by outlining a few of the papers' key questions that have raised the debate to new heights.

An Overview of the Sequence of Arguments

The first paper in the volume sets the stage for a historical approach to relationships between landscape architecture and environmentalism. Jeffrey Hyson's history of the design of American zoos, "Jungles of Eden: The Design of American Zoos," spans the entire history of American landscape design as it relates to zoos. Though zoos are not a central concern of most practicing landscape architects, they nevertheless reveal significant challenges faced by landscape designers responding to questions posed by the environmentalism over the last one hundred years and more.

Hyson establishes that landscape architects have expressed a concern about creating an adequate environment for captive animals since the mid nineteenth century, when the first American zoos were created following European precedents. The ensuing history of design ideas details a number of significant periods characterized by professional designers' views of the adequate environment for animals in a zoo and the public reception of those views. He introduces the Victorian zoo (1830s–80s); the zoological park (1880s–1910s) championed by William Temple Hornaday; the moated, rocky enclosure zoo (1920s–40s) developed in America after the principles of a German, Carl Hagenbeck; the sanitary modernist zoo (1950s–70s), that emerged following a criticism of living conditions of captive animals by a Swiss zoo director, Heini Hediger; and the naturalistic habitat revival (1960s–80s), remarkably illustrated by the works of Grant Jones and Jon Charles Coe. Though each of these design ideas is predicated upon a philosophical perspective on nature, animals, and humans, the major discontinuities between them have allowed its champions to discount all previous designs as unnatural and to ignore landscape design history to a large extent.

Hyson calls attention to some conceptual and practical problems with which landscape architects have been repeatedly colliding despite past precedents. On the conceptual side, he stresses that ideas of nature are always cultural constructions and that confusing a representation with the class of objects it is meant to represent renders artistic or professional self-criticism impossible, thus forestalling progress. On the practical side, he shows how the landscape architecture of zoos is utterly dependent on its reception by the public and how crippling the public's ignorance can be for designers. He calls attention to changes in public attitudes toward nature and society that impose themselves on landscape architects and notes the absence of sociological evidence demonstrating that landscape architects, when designing zoos, can be agents of social change.

Hyson's presentation revolves around the critical relationships between the attitudes of landscape architecture professionals and those of the general public toward the particular domain of nature at stake—the zoo, in this case. He argues that the mission of landscape architects to educate the public and instill new attitudes toward nature must be balanced against public attitudes toward nature, which demand the kind of design ideas that can be explored and eventually sustained in practice.

These assumptions indicate that variations in the dynamics of change in landscape design and practice result from the fact that all objects of landscape architecture are not predicated upon the same aspects of nature and society. The relations between nature and society as they pertain to zoos and roads, for instance, are clearly not the same, nor do these objects of landscape architecture address the same public. In fact, this volume's studies of the landscape of roads in Texas and of the landscape of multipurpose river valley development in Tennessee reveals two actors that played virtually no role in the history of zoos—the federal administration and, to a lesser degree, the professional association of landscape architects.

The Depression era witnessed the rise of environmental consciousness under dramatic circumstances in the United States. In his study of the highway construction program in Texas during that period, "Environmental Therapy for Soil and Social Erosion: Landscape Architecture and Depression-Era Highway Construction in Texas," Gregory Cushman calls attention to several cultural processes that led to a strong reliance upon a landscape approach to road design and maintenance problems. He shows that such an approach made it possible to engage in modern civil engineering and to indulge simultaneously in a romantic celebration of the rural past. He illustrates the symbolic contradiction embodied in this positive action, not to be misconstrued as a logical contradiction marring a purely technical project. Landscaping meant creating an inhabitable world without disturbing its pastoral assets—combining sound hydrology, trees and wildflowers, safety-oriented design of the road site, and the use of modern construction technology while retaining a vernacular look. This multilayered development of roadway landscaping was a result of many diverse influences exerted at the same time, allowing an unprecedented landscape policy to benefit from the support of many different groups and government agencies within the state. The policy also clearly aimed at providing the growing population of automobile tourists with amenities that conveyed a sense of both comfort and beauty. The Federal Civilian Conservation Corps drove a companion policy that established regional parks in Texas. Each policy included a scenic road designed along similar principles. These projects expressed a belief that the pleasure tourists derived from visiting scenic areas where nature conservation was at its best would fuel support for more natural conservation. Perhaps for the first time in history, landscape architecture could claim an ability to contribute to the solution of pressing social problems. Cushman also shows that the outcome of a process characterized by such a symbolic contradiction led very far from its original intentions: engineers and soil conservationists who were devoted to the idea of stable plant communities and who hoped to restore a stable rural world with the help of modern technology eventually introduced far-reaching social and ecological changes they had not anticipated.

The same ambition for a major role for landscape architecture is evidenced in the story of the Tennessee Valley Authority (TVA) provided by Brian Black in "Organic Planning: Ecology and Design in the Landscape of the Tennessee Valley Authority, 1933–45." The monumental project carried out by the TVA provides the best record of the effort by the New Deal administration to define a new role, predicated upon an environmental ethic, for the federal government. The TVA landscape was meant to be explored and appreciated by the public as a model of America's future relationships with its environment. Landscape architecture, under the aegis of the federal government, was mobilized to illustrate and propagate a new ethic. Public works could rehabilitate a natural environment that short-sighted human use had endangered, but public education was seen as a necessary component of the effort to disseminate a conservation ethic for private and public use of nature. The TVA offered a contemporary version of the American image of utopia—a pastoral ideal made available through technological progress. Black shows that the TVA was to be looked upon as a paragon illustrating the new conservation ethic. This implied a new mode of aesthetic appreciation: beyond pastoral views, American tourists were expected to discover how a myriad of professionals had interacted to produce for the common good, harnessing the most modern technologies to maintain a happy relationship between Americans and nature and between past, present, and future. Black describes in some detail how federal propaganda in such media as films, radio, and educational programs proposed interpretive models for the landscapes of modern conservation.

The TVA established new definitions for landscape architecture, inviting the visual enjoyment of TVA dams so that they could be viewed in terms of landscape appreciation, offering lakes as technological monuments in a pastoral landscape, and employing a multipurpose, functional scheme to achieve a highly productive use of the land. Tourism, encouraged to foster the educational function of the TVA, grew beyond expectations. Public appreciation for this federal policy of monumental natural landscape conservation, which stressed the mutual dependence between humans and nature, gained momentum. Human ecology, rather than plant ecology, captured the mind of the public, that is, as Black notes, until the TVA became associated in the public eye with energy production and the war effort during World War II. New symbolic meanings developed, blurring the initial intentions that had been written with great effort in a hugely popular project. Embodying a conservation ethic in a widely appreciated landscape proved insufficient to inscribe this ethic in the public mind or even to make this project a lasting tribute to an environmental ethic.

Present-day critics of the TVA find fault with what they see as the agency's overzealous will to dominate nature, even though, as Black shows, such an agenda was far from its intent. Such critics demand that landscape architects adopt a different attitude toward nature.

Landscape architects shared a sense of discontent with many aspects of modernism. It is worth noting that recent histories of modernism in landscape architecture do not mention the sanitary modernism phase that Hyson describes in zoo landscapes during the 1950s, 1960s, and 1970s. The reason is quite obvious. This design attitude was predicated upon an ethological analysis of nature, and landscape architecture for the most part was indifferent to animal behavior, being mostly concerned with soils, water, and plants, which do not lend themselves to an easy approach by a behavioral science. Thus, many landscape architects were rejecting modernism as a dangerous ideology at the same time that other landscape architects were producing modernist designs for zoos. The first ones, who were soon to rally under the ideas of Ian McHarg, were riding a powerful wave of public opinion. Anne Whiston Spirn tells this story in "Ian McHarg, Landscape Architecture, and Environmentalism: Ideas and Methods in Context." She offers an account of the development of a major American trend in landscape architecture as both witness and participant.

Ian McHarg has had a major role in redefining the professional agenda for landscape architects in the United States. He has done so by casting landscape architects' somewhat-forgotten interests in large-scale planning and the imitation of nature into a revolutionary perspective. This could be termed critical environmentalism, since it aimed at a critical reassessment of humankind's relationship to nature. After his arrival at the University of Pennsylvania in 1954, McHarg established a landscape architecture department with strong links to city planning and in 1959 launched a multidisciplinary course, "Man and Environment," inviting an impressive array of diverse thinkers to participate in redefining the tasks of landscape architecture. The stimulating discourse that ensued culminated in the publication of his landmark book, *Design with Nature.* Similarly, he engaged in a dialectic between his innovative private practice and theory building at the university. Most of the theory was developed from design material produced in the midst of a series of innovative courses in 1956, 1962, and 1965, when a most important work for the Department of the Interior on the Potomac River Basin gave McHarg the opportunity to develop his methodology for an "ecological inventory." Spirn draws a parallel between this method of site analysis and a doctor's clinical checkup. McHarg's methodology dictated that any site must be seen as part of the larger organism and must be treated with respect to problems faced by the organism as a whole.

McHarg fell victim to his own success. He would be called on to provide ecological diagnostics but was not asked to propose designs. In the late 1960s, however, he received the commission to design a large zoological garden near Tehran. Though McHarg always felt that zoos were the very symbol of an abominated homocentric view, as Hyson notes in his paper, he saw this project as an opportunity to create a biocentric botanical and zoological garden. Such an enterprise, with its large collection of animals from all around the world, each in its own habitat, was expected to offer a series of highly educational experiences and prompt Iranians to adopt a biocentric worldview during their visit. But the project was at odds with the ecological philosophy that McHarg was defending, since only the most rigorous artificial climate control would have allowed such a place to be built and maintained in Iran. The project stirred great anxieties among his colleagues and partners, who quietly distanced themselves. The fall of the shah regime in 1979 put a halt to the project and to the career of McHarg as a practitioner.

Taking stock of his legacy, Spirn notes how McHarg made "ecology 'not only an explanation, but also a command,'" conflating science and ethic and opening the way for a moralist attitude among landscape architects.[1] At the same time that he stressed an understanding of regional ecosystems, he underwrote an anti-urban aspect of American culture that ignored city problems. Despite his lifelong struggle over whether to preserve nature or manage it, he left the dilemma unsolved for his intellectual heirs.

McHarg provided a new scientific legitimacy, a social mandate, and a method of landscape architecture. He viewed ecosystems as organisms that would evolve toward a climax if they were not disturbed by irresponsible human action. Thus, he saw natural processes as geared toward a balance. At the same time that groups most sensitive to ecological issues in the United States, especially landscape architects, were disseminating this new environmental ethic, however, scientists were questioning its scientific basis. Robert Cook, in "Do Landscapes Learn? Ecology's 'New Paradigm' and Design in Landscape Architecture," reflects upon these changes and their possible significance for landscape architecture.

A short history of scientific ecology helps explain why relationships between science and landscape architecture are not quite as simple as environmental discourse would have it. This history can be divided into several periods, each dominated by a distinctive paradigm—first, the old paradigm (1905–40s), initiated by Frederick E. Clements; then the thermodynamic paradigm (1930s–80s), of which Eugene Odum is the best-known author; and finally the evolutionary paradigm (1980s–present). The first two paradigms draw an analogy between nature and an organism, attributing to nature the "characteristics of development, integration and homeostasis similar to an individual plant or animal" while excluding humans.[2] The second paradigm was the basis upon which McHarg founded the construction of a new practice and ethic of landscape architecture, with its insistence upon achieving a balance in nature. The third paradigm emphasizes the evolution of ecosystems and communities and usually includes humans as part of nature's dynamics. Noting the drastic revision of ecological interpretations of natural phenomena that have become the basis for an evolutionary ecology, Cook shows how this revision is leading to a renewal of experimental approaches to assess the impact of contemporary human action upon the course of nature.

Thus disabused of any idea of a fantasy natural world where human interaction is inconsequential, landscape architects might wish to consider the consequences of their own actions. Cook posits the possibility of landscape architects collaborating with ecologists to discover which paths of development their work may open for a nature inhabited by humans and other animals. He sums up this thought in a graphic question: "Can clinical trials on the ecological impact of the perennial border or the linden allée be far behind?"[3]

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[1] Anne Whiston Spirn, "Ian McHarg, Landscape Architecture, and Environmentalism: Ideas and Methods in Context," in *Environmentalism in Landscape Architecture,* ed. Michel Conan (Washington, D.C.: Dumbarton Oaks, 2000), 112.

[2] Robert Cook, "Do Landscapes Learn? Ecology's 'New Paradigm' and Design in Landscape Architecture," in Conan, *Environmentalism in Landscape Architecture*, 4.

These changes in relationships would call for a renewed effort at thinking through relationships between landscape architecture and ecology. Quoting Spirn, Cook insists on maintaining a clear distinction between knowledge, ethic, and aesthetic, arguing that science can be a source of inspiration if "its limits as authority for aesthetic and moral decisions" are clearly acknowledged.[4] This leads to a deep-probing remark about landscape appreciation. Noting the primacy afforded visual experiences by landscape architects, Cook contrasts it with the time-oriented language of scientists. He goes on to ask whether landscape design could be geared toward and guided by a new aesthetic appreciation of temporality.

The urge to educate, to raise environmental awareness, and to disseminate a new ethic has stimulated an outpouring of publications explaining designers' intentions and the possible contributions of landscape architecture to the development of environmentalism. Daniel J. Nadenicek and Catherine Hastings conducted a methodical criticism of relationships between the words and the works of a large sample of landscape architects. They summarized their findings in "Environmental Rhetoric, Environmental Sophism: The Words and Work of Landscape Architecture."

Nadenicek and Hastings adopted a two-pronged approach. First, they made a systematic cluster analysis of the vocabulary in member handbook of the American Society of Landscape Architects (ASLA), which pronounces the society's professional mandate with respect to the environment. They sought to sort out the main idioms and the most central terms used in key sections of the handbook. This yielded four idioms—deep environmentalism, preservation environmentalism, integrative environmentalism, and ecological environmentalism. Each is presented and discussed in turn. Second, they turned their attention to a selection of articles in the ASLA journal, *Landscape Architecture,* on environmental projects from 1965 to the present. They then sorted the projects according to purpose, making a distinction between remedial and interpretive projects. Nadenicek and Hastings show that remedial projects deriving from a self-contained perspective—preservation environmentalism, for instance—fall prey to critiques by other landscape architects arguing from a different perspective—integrative environmentalism, in this case—and that interpretive projects call loosely on a variety of perspectives that are not mutually consistent. Thus, environmentalism cannot be said to have provided either a unified discourse or a unified agenda for landscape architecture.

The practical conclusion is simple. The impact of environmentalism upon landscape architecture is not to be found in discourse but rather in design processes and in design aesthetics—that is, in the work itself. The essays by Paul Kelsch and Elizabeth Meyer examine these domains.

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[3] Ibid., 127.

[4] Ibid., 129.

In "Constructions of American Forest: Four Landscapes, Four Readings," Kelsch reveals how powerful metaphors are at work behind discourses and debates that borrow from ecological science. To illustrate his point, he compares two environmental artworks, *Host Analog* by Buster Simpson in Portland, Oregon, and *Time Landscape*™ by Alan Sonfist in New York City, with two highly valued forests that were devastated by hurricanes. He shows how artists and all sorts of people engaged in debates about forests often use an ecological vocabulary while their attitudes, values, and intentions are structured by a metaphorical representation of nature as wilderness. Because this metaphor rests upon an equilibrium paradigm in ecology, it discourages attention to the forces and regimes of disturbance that are studied by evolutionary ecology.

Kelsch introduces two other metaphors—the garden metaphor, borrowed from Michael Pollan, and the community metaphor. In the garden metaphor, humans interact with forces of nature that escape their control as they strive to achieve a cultural gestalt—conservation or restoration of the wilderness, for instance. Such cultural gestalt is open to public debate. The community metaphor also opens perspectives for social interaction, albeit in quite a different way. It allows a landscape to be transformed through the daily interactions of its users and visitors as they respond to the initial intention. Significantly, though all the artworks and forests Kelsch analyzes bear an affinity to the presettlement American forest, they proceed from different metaphors. Metaphors are mental schema guiding the designer's actions rather than prefiguring the kind of landscape to be achieved. This is clearly an attempt at understanding thinking-in-landscape design, to paraphrase Donald Schön.[5] Kelsch introduces a psychological interpretation of the human experience of walking in a forest to demonstrate that humans attach meaning and intention to places and that they see themselves as a part of nature. He concludes that nature is always as much of a social and cultural construction as it is a biological, zoological, or ecological phenomenon. Responding indirectly to Cook, he asserts that landscapes are learning processes and that to steer them, one should learn their history first.

In "The Post-Earth Day Conundrum: Translating Environmental Values into Landscape Design" Elizabeth Meyer attends directly to the works of a few contemporary landscape architects and probes their efficiency in the use of new aesthetics.

While McHarg and his followers reconceptualized professional attitudes toward nature, they simply reverted to variants of the American picturesque tradition when giving form to nature. This methodology came under attack by a few landscape architects responding to challenges through minimalist, environmental, and land art in the 1960s and 1970s. Beyond disputes between artistic trends, Meyer observes the emergence of an aesthetic of engagement in some of the works by Peter Walker and Lawrence Halprin. She documents how this move toward designs eliciting an engagement with nature was consummated by the following generation of designers. To bring to the fore the distinguishing features of this generation, Meyer turns to phenomenology and to Arnold Berleant's philosophy of the art of engagement.

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[5] Donald Schön, *The Reflective Practitioner: How Professionals Think in Action* (New York: Basic Books, 1983).

Rather than creating landscapes offered to the gaze of beholders, these designers aim at creating events that prompt visitors to interact with one another and their environment. They also attempt to offer a wide range of multisensory experiences by inviting everyone to make sense of his or her relationship to the environment in strictly personal terms. Finally, they attend to the dynamics of all possible aspects of the landscape through time, turning these processes into sources for design.

Some additional perspectives unite the designers under discussion. Attuned to geomorphology and land dynamics, these designers opt to develop new landforms and accentuate local features by introducing invented forms that escape the arbitrariness of formalism. They recognize different time scales, which command the processes of natural development, as well as the superimposition of developmental processes in a city. Lastly, they spurn any attempt to substitute an idealized landscape for any wasteland.

As a whole, Meyer points to a radical departure from the tenets of modern landscape design as the major legacy of a thirty-year relationship between landscape architecture and environmentalism since the mid-1960s. These influential landscape architects no longer aim at defining a clearly controlled space for the enjoyment of outside observers; instead, they aim at allowing eventful encounters that evolve through time between natural environments and those with a stake in them. Their designs develop from observations of patterns and forms discovered in natural processes rather than from precedents found in fine art. Because ecological values are embodied in their work, Meyer claims that their landscape creations inculcate a new environmental awareness and perhaps even a new environmental ethic.

While Meyer excludes from her discussion the work of Andropogon and Associates and other McHargian-oriented landscape architects who turned their backs on form giving in their own design, she demonstrates that environmentalism has stimulated a remarkable renewal of landscape architecture. There is, however, a striking proximity between the aims pursued by the immersion aesthetic presented by Hyson in his historical account of zoo design and the engagement aesthetic analyzed by Meyer, despite radical differences in the means employed by the landscape architects studied. Immersion zoo designers attempt a hyperrealist imitation of nature, while Meyer's designers deliberately inscribe new forms in their settings. One wonders whether the latter are more successful than the former in achieving a kind of engagement of visitors' empathy toward nature. This is an empirical question that would deserve some research. The question is clearly a fundamental one for the profession of landscape architecture: is this new landscape aesthetic likely to support a lasting development of environmental awareness? Black and Cushman have shown that the involvement of landscape architects on a very large scale failed to establish a lasting conservation ethic of the New Deal. Does the same fate await more recent developments? Taiichi Ito and Mieko Kawarada's study of the history of Japanese attitudes toward gardens and the environment suggests that the question is far more complex than it seems.

Contemporary Japanese gardens display the population's engagement with nature, and yet there is little attention to the environment in Japan at present. In view of Japan's history, this is somewhat paradoxical. Contemporary garden art is heir to a long tradition of garden making aimed at engaging with nature even in very dense cities. At the time of its inception around A.D. 800, this art was very successful in fostering a comprehensive environmental awareness. But it no longer does. Something has been lost that helped couple engagement with nature at home and with nature in the broader environment. Could this loss be attributed to changes in garden art itself or to something else?

Ito and Kawarada start their study with a presentation of the Toba imperial garden from the early twelfth century, using archaeological findings, *waka* poems, and cultural history. They explain how this garden and other gardens from that period were designed, which activities they supported, and what prompted courtiers to respond to the natural environment both in the garden and out. They then proceed to explain the circumstances that promoted changes and caused garden dwellers to grow more and more alienated from the middle-ground landscape—political unrest, which encouraged rich people to withdraw into the seclusion of their gardens while retaining only a visual link to "borrowed" distant landscapes, and later urban development, which compromised the purity of this visual relationship and led to further retreat into the garden. But, even the daimyo gardens of the Edo period (1603–1867), which enjoyed a visual relationship between the garden and distant views of nature, failed to maintain an engagement with the surrounding environment. According to Ito and Kawarada, this loss resulted from the abandonment of two kinds of social activities that had promoted a culture of engagement with nature. These activities allowed courtiers to not only express their personal engagement with nature while leisurely interacting with one another, but also establish strong links between activities in the garden and those in the surrounding environment.

In a few challenging lines, Ito and Kawarada also explain how the development of the garden as a visual art and the professionalization of garden designers has contributed to the paradox of a nation of nature lovers alienated from their environment. Their conclusion suggests that landscape architecture should stimulate a sense of wonder and invite creative interpretive activities. This is very much in line with developments described by Meyer in her presentation. Ito and Kawarada's text, however, carries consequences beyond their own conclusion and challenges the current educational worth of landscape architecture for disseminating environmental values. Such values do not develop from individual engagement with nature, nor through a literary awareness, as the authors demonstrated with the daimyo garden. The development of environmental values demands an active participation in the interpretation of nature and a sustained ritual of interaction that fosters intersubjectivity.

New questions for research emerge throughout the volume. Why did large and immensely popular landscapes fail to keep alive the memory of the environmental conservation ideals that they were commemorating? Will most of today's acclaimed ecological or environmental landscape designs fail to keep alive the ethical mandate toward conservation they attempt to convey? Can the public err completely in its interpretations of landscape and turn a deaf ear to programs of environmental education? In a different vein, can landscape architecture accommodate conflicting intentions, such as a respect for tradition and a quest for progress, if such contradictions were detrimental to scientific pursuit? Is there a fundamental difference between discourses about landscapes to be experienced and landscapes to be verified, or are there conditions under which forms in landscape function like discursive signs? What domains of metaphorical imagination are offered to landscape architects by the environmentalist critique of modernism? What are the potentials or pitfalls of a modernist (or functionalist) environmentalism? How does a new aesthetic develop in landscape architecture, and can it circumvent the public's insatiable visual orientation and stimulate other senses over time? Can landscape architecture create totally new forms of sensual experience? Can ethical values be derived unambiguously from such experiences? These are some of the questions that come immediately to mind after reading the papers collected in this volume.

But are they the most important for our topic? This is unlikely. A second reading may reveal different issues, in a slightly more organized way. Before some view of the most important topics for critical discussion can be achieved, however, more debates focused on aspects of the relationships between environmentalism and landscape architecture that were not explored at this colloquium should be organized.

Another conference might have been devoted entirely to interactions between ecological engineering and landscape architecture, or to a critical assessment of contributions of landscape architecture to sustainable development, or to a confrontation between approaches to environmentalism in European and American landscape architecture, or to a worldwide study of the relative impact of environmentalism upon landscape architecture in different countries. Each of these would bring a set of new questions and would help generate a larger debate about potential relationships between landscape architecture and environmentalism.

We have seen in the presentations at this colloquium some impressive developments in landscape architecture that resulted from its uneasy encounter with environmentalism. We should likewise acknowledge the implicit links or debates about landscape architecture's contributions to environmentalism that also ran through several presentations. From our second reading, let us select four of them—the political significance of landscape architecture, the rediscovery of metaphorical thinking in landscape architecture, the search for a new landscape aesthetic, and the neglect of landscape reception.

The Political Significance of Landscape Architecture for the Development of Environmentalism

Nadenicek and Hastings emphasized the existence of contending ways of speaking in the name of contemporary environmentalism. Rather than a firmly established doctrine, environmentalism appears to be a movement of opinion or, more precisely, several movements of opinion. All of them share one deep-rooted characteristic: they develop a language for political action that derives its norms of action from explicit concerns about the environment where humans live. Since there are very different ways of conceiving the environment and also very different processes for constructing and disseminating norms of action, it stands to reason that environmentalism would follow very different courses according to time and place. Thus, an understanding of relationships between landscape architecture and environmentalism should be tested, in principle, against a variety of historical situations. Happily, the situations presented in this book range from mid-nineteenth-century zoo developments to contemporary landfill rehabilitation in the United States, and from ninth-century imperial gardens to contemporary town gardens in Japan. Most presentations, however, deal with twentieth-century American environmentalism, which has a major hallmark: it derives its view of the environment from the natural sciences and seeks to borrow their legitimacy when establishing its norms of action. This limitation has proved beneficial.

Many social movements in the past have sought to use scientific discoveries as the basis for the ethical and moral course of action they recommended. The search for a natural law that would provide a basis beyond any reasonable dispute for the governing of human affairs dates at least as far back as the eighteenth century. It is well known that landscape gardening developed as a way for English patricians to express and debate these ideas in allegorical or symbolic terms. Their attention to natural law, however, resulted from a philosophical, rather than a scientific, inquiry.

Closer to us historically, the doctrine of polygeny, sometimes known as the American school of anthropology, offers a telling example. It was established by Louis Agassiz (1807–73) and Samuel George Morton (1799–1851), who used measurements of skulls to study racial differences and presented as scientific fact the intellectual superiority of modern Caucasians over Native Americans and of Native Americans over Africans. At the time, a few scientists used the doctrine to defend racial segregation. Stephen Jay Gould notes in *The Mismeasure of Man:*

> Agassiz's world collapsed during the last decade of his life. His students rebelled; his supporters defected. He remained a hero to the public, but scientists began to regard him as a rigid and aging dogmatist, standing firm in his antiquated beliefs before the Darwinian tide.[6]

This is precisely the problem with all attempts to ground ethics in science. All scientific theories are open to challenge and have a limited lifetime. One might have expected that scientific debates would have undermined environmentalism and raised doubts about the legitimacy of many landscape designs with a claim to environmental value. Ecology in particular has stimulated very important scientific debates, which, as Cook explains, have led to the abandonment of the teleology that was central to the ecology upon which McHarg and his followers based their practical and ethical propositions. This might have prevented any practical link between environmentalism and landscape architecture to remain a legitimate basis for professional action. Fortunately, such has not been the case. Instead, as shown in different ways by Nadenicek and Hastings, Kelsch, and Meyer, various ideas and intellectual perspectives, some of them mutually contradictory, are used to propose an environmentalist direction for landscape architecture, and they tend to coexist in practical implementations. We can see that they, as a whole, have stimulated debates among designers since at least the 1970s and induced invention and reflection about the scope, role, and means of landscape architecture. Design proposals have similarly generated debates because they sustain specific claims about environmentalism, which draw criticism from constituencies defending different environmental perspectives. In other words, because landscape architecture espouses contradictory views of environmentalism, it provides opportunities for public debate about what best defines a mutually beneficial relationship between humans and nature.

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[6] Stephen Jay Gould, *The Mismeasure of Man* (New York: Norton, 1981), 50.

If we agree that opinions are formed through debates and social interactions, we may conclude that a large measure of landscape architecture's contribution to the dissemination of an awareness about environmentalism derives from the controversies it engenders, rather than the public's acquiescence to the supposed ecological authenticity of design. This analysis can be pursued slightly further when comparing present situations to those described by Cushman and Black. During the New Deal era, conservation movements regained a popularity in public administration and received larger institutional support to implement environmentalist agendas than their predecessors had attained thirty years earlier under Theodore Roosevelt's presidency.[7] Like their predecessors, the New Deal conservation movements defined the environment in scientific terms borrowed mainly from hydrology, geology, forestry, and economics. Ecology, mostly concerned with the population of plants, played only a minor role. But these movements achieved a redefinition of the national idea of conservation through the implementation of large-scale models such as the Texas highways, the TVA, and the CCC parkways, accompanied by a systematic effort at propaganda through educational programs. Conservation implied achieving a sustainable use of resources, maintaining traditional ways of life in rural America, and increasing global welfare by the scientific management of resources. In contrast to what had happened during Theodore Roosevelt's administration, landscape architects were called on to play an eminent role in the management and visual design of all projects that contributed to these models. Black notes that this involvement boosted the development of landscape architecture throughout the United States. Landscape architects were expected to give forms to the projects in such a way that the American public, when traveling the highways or visiting TVA projects, or the national parks, would understand, appreciate, and support the New Deal's contribution to the common welfare through conservation.

Three differences distinguish the relationship between landscape architecture and environmentalism then and now. During the New Deal, there was no debate among landscape architects about the scientific basis of design; landscape architects were engaged in the development of huge programs that were making a marked impact upon state economies; and the results of the contributions by landscape architects were largely acclaimed by the public, which unabashedly voiced its appreciation. And yet these conservation ideals were quickly forgotten in the early forties, when the war effort and the resulting economic boom introduced the dream of modern affluence to American society. Black reminds us that tourists were still flocking to TVA landscapes in the 1950s and 1960s, and scenic parkways are still popular among contemporary tourists. But visual enjoyment of these landscapes does not bring to mind the New Deal ideals of regional conservation of land and water resources under federal rule and technical guidance. That such landscapes resulted from an unprecedented development of landscape architecture in the United States is rarely even considered.

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[7] Samuel Hays, *Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890–1920* (New York: Atheneum, 1969).

Another difference should be stressed. The creation of new landscapes that expressed an environmentalist ideal during the New Deal was initiated by large public agencies and managed by technicians, whereas new projects expressing an environmentalist ideal since the 1960s have been the result of highly pluralist influences that have given rise to public debates, political scrutiny, and media coverage. The former environmentalism resulted in unified approaches to landscape projects that successfully achieved visually pleasant landscapes. They did not stir public debate; on the contrary, they received a consensual approval. But they did not stimulate the development of a conservation ideal. Contemporary environmentalism has engendered contending orientations for landscape architecture, stimulating debate about landscape aesthetics and fomenting conflicting judgments about some noted projects. This debate has been accompanied by a large increase in public awareness about environmental issues.

The Rediscovery of Metaphorical Thinking in Landscape Architecture

A line of questioning about the specificity of design thinking in landscape architecture runs across most contributions in this volume. Beyond disputes about the respective merits of scientific methods and artistic approaches, it calls attention to metaphorical thinking and to its somewhat elusive presence. Cook demonstrates the negative impact of the organismic metaphor upon the development of ecological science. He shows how it has caught serious empirical research in circular traps (the Alaska glacier), and he clearly reasserts the need to suspend beliefs of a metaphorical nature to pursue scientific research. And yet when discussing possible developments of landscape architecture predicated upon contemporary thinking in evolutionary theory, he calls up a future image of landscape architects attending to the health of a territory. Of course the concept of health is somewhat vague, but it implies a self-regulating organism and the existence of a normal course of development. This reintroduction of the organismic metaphor may simply indicate that metaphors can also be productive to a scientist in developing his or her thoughts. In fact, in her study of uses of the organismic metaphor in the social sciences at the turn of the century, Judith Schlanger, has demonstrated very clearly that depending upon how it was used, metaphorical thought could either stifle critical thinking or stimulate theoretical and conceptual reasoning.[8]

A similar case can be made for further uses of metaphorical thinking in landscape design. Kelsch has built his entire argument around the elucidation of images of nature at work in different landscaping situations. Most of the other authors also allude, at least in passing, to metaphorical aspects of landscape design. As a whole, they provide an overview of several uses of metaphors in landscape design. Representing nature as an image of an ideal situation—such as a pastoral landscape, a rural American idyll, a utopian modernist America, or a presettlement American wilderness—is the most common use of metaphor. Metaphors also allow viewers to see the actual landscape before them as if it were a mere embodiment of a familiar pattern. Landscaping makes an imaginary world come true or, rather, appear to be true. Such a metaphorical landscape can be used for educational as well as ideological purposes. Meyer, however, points to a different use of metaphors when she explains how invented forms of landscape are meant to display geomorphological processes. Here the metaphor is not found in a representation but rather in the process of formal invention. It is a radical change since, instead of imposing a formal pattern, it opens an infinite realm of landscape forms derived from dynamic interpretations of nature's morphogenesis.

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[8] Judith Schlanger, *Les métaphores de l'organisme* (Paris: J. Vrin, 1971).

Kelsch brings to light further aspects of metaphorical thinking when exploring the possibilities offered by the "garden" and the "community" metaphors. Both originate in an imaginary process rather than a land pattern, and they provide metaphors for landscaping processes or changes in the landscape over a period of time, rather than a fixed landscape form. These metaphors are also distinctive in placing man/nature relationships at the core of the design process. Actually, the community metaphor downplays the privilege of the landscape designer to shape places in nature. The community metaphor makes sense of place dependent upon interpretations gleaned to a certain extent from representations shared by users before the landscape architect intervened. As a consequence, a design approach predicated upon such a metaphor will necessarily embed further images, myths, and representations shared by some of its users. As *Time Landscape*™ suggests, any place becomes a display of cultural encounters between local people, the landscape architect, and visitors. Any new design enters a course of development prompted by local metaphors. Thus, beyond modernist design principles grafting functionalist land-use planning upon arbitrary landforms and vegetation, environmentalism has stimulated the rediscovery of the usefulness of metaphors in the design process. Their significance is twofold. Metaphors have no fixed form—on the contrary, they invite formal invention—and they allow designers to appropriate a formal idiom that makes sense to at least part of their constituency.

Ito and Karawarda underscore the versatility of metaphors in their study of relationships between environmentalism and landscape architecture. Environmentalism in Japan developed as a cultural movement at a time when the idea of scientific knowledge could not even be imagined. So instead of attempting conceptual clarity, Japanese environmentalists used symbolic and metaphorical language to express their engagement with nature and to exchange a sense of wholeness even in minute encounters with nature that would have escaped any complete and precise wording. This metaphoric language was particularly well suited to express symbolic relationships between nature in the garden and nature in the larger environment, and it was also well adapted to relate to the metaphorical aspects of garden design itself. By permeating Japanese environmentalism, metaphorical thinking may have avoided the endless disputes over contradictory arguments that issued from scientific disputes in Western culture. Most important, it may have allowed the interplay of landscape design and court poetry to stimulate and spread a long-lasting attention to and concern for nature among the Japanese.

The Search for a New Landscape Aesthetic

There is little doubt that a new landscape aesthetic is being born. This is a slow process. It has been documented since the early 1960s, with the development of land art, and since the mid-1960s and early 1970s, with the renewal of garden art and landscape architecture. How much of this can be attributed to the simultaneous development of a relationship between landscape architecture and environmentalism?

Several presentations in this volume provide interesting clues, even if a satisfactory answer would deserve much more research. Meyer defends the idea that a new landscape aesthetic of engagement, instead of the past aesthetics of contemplation, has resulted from the search by landscape architects for a new positioning of their work to avoid the pitfall of reducing it to bioecological engineering in line with McHarg or Andropogon Associates, as well as the pitfall of seeing landscape as art for art's sake, explored by minimalist artists such as Carl Andre, Donald Judd, or Christo. This aesthetic of engagement was made possible by the twin influences of phenomenology and ecology, and it was already clearly recognizable in the works of many noted American landscape architects of the 1980s. Thus, the birth of this new landscape aesthetic seems to be serendipitous. It seems to parallel the development of modernist architecture in the 1920s—the extraordinary result of a chance encounter between a social movement, modern industrialism and consumerism, and the artistic movements of suprematism and constructivism, as noted by Jurgen Habermas.[9] There are very good grounds to defend that thesis.

The same events can be seen in a slightly different light, however, if one notes the competing attempts at redefining aesthetic attitudes toward nature in the presentations by Black, Cushman, Hyson, Cook, and Meyer herself. Black describes David Lilienthal's hopes that visitors to TVA projects would discover under the veneer of delightful scenic views the wonders achieved by modern technology harnessed by social engineering. He expected the public to enjoy the sight of pure water flowing into artificial lakes and to reflect upon the lack of erosion. Similarly, he hoped that the TVA landscape would make the invisible become visible, as Meyer would phrase it. Landscape forms were borrowed from the American pastoral made extremely popular by Olmstedian parks and parkways. TVA landscapes were expected to indulge in nostalgic memories of rural ideals. But they were also quite different, with huge dams nestled in the valleys, power lines intersecting the skies, modern-style buildings, and signs everywhere of industrial activities, commerce, and consumption. The picturesque strategies were borrowed to offer a modern version of classical countrysides.

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[9] Jurgen Habermas, *The Philosophical Discourse of Modernity: Twelve Lectures*, trans. Frederick G. Lawrence (Cambridge, Mass.: MIT Press, 1990), and "Modern and Postmodern Architecture," in *Architecture Theory since 1968*, ed. K. Michael Hays (Cambridge, Mass.: MIT Press, 1998), 416–25.

In keeping with classical aesthetics, landscapes designed as works of art were meant for pleasure and moral education—a central tenet of classical art. The same observation can be made about landscapes in zoos. Since their beginnings in the United States, zoos have been meant to be places where the enjoyment of animals in a sequence of sceneries would lead to a better knowledge of nature and contribute to the development of a more civilized citizenry. Of course, Hyson shows that changing views of nature lead to changing approaches to landscaping and to changing expectations for moral enlightenment. But whatever the viewpoint, the urge for an aesthetic that accommodates the public's expectations and teaches mind and soul is ever present. The same urge gave rise to the expectation that highway landscaping, offering pleasant recollections of an idealized past through mock masonry bridges and wildflowers trained along the highway embankments, could induce cautious driving and national pride.

The call upon landscape design as a tool for the dissemination of an environmentalism based upon scientific interpretations of nature implied such a development of new aesthetic attitudes in the public. The New Deal administration was consistent in its projects when it embarked upon large-scale educational programs meant to teach new ways of seeing and interpreting nature. We can see now that the means were not appropriate, but we should acknowledge that an effort to disseminate a new landscape aesthetic with moral and ethical implications was deliberately organized then.

Jumping ahead several decades, McHarg embraced the same hope that visitors attending an ecologically sound environment would appreciate the system dynamics that structure it and derive from the landscape a will to respect nature. The search for a new aesthetic is even more clearly expressed in Cook's presentation of the contrast between the visual culture of landscape architects, whose work invites an appreciation of space, with the time-oriented culture of contemporary evolutionary ecologists, whose work relies upon an attention to development over time. Of course, previous generations of ecologists, with their focus on climax, or equilibrium, in nature, were just as oriented to spatial phenomena as landscape architects. This allowed ecologists and landscape architects to aim at a common aesthetic appreciation of ecologically designed space. Cook shows that the confusion is no longer possible and that the search for a new aesthetic is more urgent than ever before.

Certainly different aesthetic expectations for landscape as defined by Cook, McHarg, Earle Draper (TVA), and Jac Gubbels (Texas highways) can be traced in part to shifts in scientific paradigms upon which their respective environmentalism was founded. But there is a large gap between 1940 and 1962, to which Hyson's presentation calls attention. This is the time when a modernist aesthetic was pursued. It heralded a period of economic growth, during which American politics and American culture took a new direction. The welfare state lost its hold on the American imagination. Among the presentations, not much research was presented on possible relationships between large-scale cultural changes and new directions for landscape architecture, with the exception of Nadenicek and Hastings's discussion of the development of environmentalism in the 1960s as a protest movement against federal politics and modernist projects.

Meyer's contribution is the only one in this volume that suggests a deep-rooted interpretation of the conflicting relationships between modernism and landscape architecture. Expanding on Arnold Berleant's "participatory model of aesthetic experience," she identifies three tenets of modernism that the new landscape art of engagement abandoned—abstract space as the specific medium of architecture, art as object, and time invariance. She then introduces the importance of the idea of "dwelling" for landscape architects with an environmental frame of mind. Dwelling can be opposed to housing, much as place is opposed to space or living experience to economic function. The living experience of dwelling in a place cannot be subsumed under the economic function of housing space. Landscape architects who felt alienated by the modernist reification of landscape greeted Christian Norberg-Schulz's translation of phenomenology into concerns for designers. A few landscape architects set for themselves the task of creating places where visitors or dwellers could indulge in new living experiences, rather than offering immaculate if ecologically sound sights to the gaze of detached observers. This shift in the goals for landscape design allowed them to reconceptualize in their own way views of nature defended by ecologists without following the path toward ecological functionalism pursued by McHarg. They found themselves in the position of deriving inspiration for invention from scientific descriptions of the dynamics in nature. Thus, we may see the advent of this new direction in American landscape architecture as the outcome of a more general critique of modernism. But we must also acknowledge the impact of environmentalism upon its course. Turning from the development of ideas to their aesthetic appreciation, Meyer notes that these landscape designs should make environment processes and forms more understandable and engender a sense of mutual exchange between humans and nature. Here again, despite claims to the contrary, aesthetic appreciation is predicated upon a dualistic view of nature—one reached through scientific knowledge, the other through multisensory perception. In the same way that the New Deal landscape designers expected visual experience to open the mind of the public to scientific knowledge, contemporary landscape designers expect multisensory experience to open the mind of the public to an understanding of nature's dynamics. This program may fail to be fully realized, but it is not strictly repeating the course of interactions between landscape architecture and environmentalism that has already taken place. To be precise, instead of embodying modernism as it did during the New Deal, process-oriented landscape architecture seeks to establish an alternative aesthetic to post-World War II modernism.

The difference is all the more striking when one compares the kinds of immersion experiences in recently designed zoos, as described by Hyson. While, as Spirn has noted, the quest for a hyper realist rendering of an animal's ecosystem detracts attention from the natural landscape, the intentional manipulation of visitors' interaction with nature calls attention to nature and to unusual sensory experiences. In that sense we can acknowledge that a new aesthetic for landscape architecture is being born as a result of its encounters with environmentalism, even if the merit of its development is debated.

Reception: A Neglected Issue

We cannot say whether visitors to these landscapes will experience the dramatic sense of natural dynamics at work through time or whether they will adopt a different attitude. Will visitors to the Haag's *Moss Garden* at *Bloedel Reserve* discover, for instance, a memorial to lumbering operations where entropy is at work or a place of eternal beauty forever protected by moss? Do contemporary tourists see snow-capped mountains, glaciers, meandering rivers, and beaches as places of unrelenting decay and erosion or as places of beauty or sublimity where a sense of timelessness can be enjoyed?

Hyson notes very accurately that "environmentalism, of course, suggests not just the celebration of nature but advocacy and instruction, the promotion of an increased consciousness about the natural world around us."[10] This observation has been corroborated by Cushman and Black for the New Deal landscapes of conservation, by Nadenicek and Hastings for the ASLA as a whole, by Kelsch for the environmental art by Simpson and Sonfist, by Meyer for the landscapes of engagement in the 1980s, and by Cook for ecological restoration in the near future. This repeated claim for the educational value of landscape designs by advocates of different brands of environmentalism explains why landscape designs for zoos deserve careful scrutiny in any attempt to unravel relationships between landscape architecture and environmentalism. They subsume all aspects of this relationship, and they exacerbate the tension between the educational intentions of designers and commissioners on the one hand and the search for enjoyment by visitors on the other. The first paper in this volume highlights a major shortcoming by landscape architects and landscape critics—the "failure to consider the reception" of landscape designs. Quoting anecdotal observations and surveys, Hyson asserts that visitors to contemporary American zoos come primarily to see the animals rather than to learn about ecosystems. Too much education may spoil the fun, and in the long run, visitors' expectations dictate the kind of attention that zoos receive. He concludes that zoo designers who seriously expect to disseminate new information and new ethics to their visitors should engage in studies of the reception of their works. This blindness to the importance of reception in landscape design is certainly not a specific feature of environmentally driven landscaping, as can be readily seen by the lack of studies devoted to the reception of gardens as well as public or private landscape designs. But environmentalism, in insisting that landscape should simulate nature and stimulate learning about it, has set an especially formidable challenge for landscape architects. Spirn has argued that visitors direct their attention to those features that display intentions and allow other aspects of the surroundings to slip into the background. The more landscape architects strive at producing an environment that emulates nature, the more successful they are at reproducing systemic dynamics devoid of any signs of human intention, the more their works will escape visitors' attention. How can such a strategy lead to learning about nature?

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[10] Jeffrey Hyson, "Jungles of Eden: The Design of American Zoos," in Conan, *Environmentalism in Landscape Architecture,* 17.

Kelsch and Cook do not share the view of nature that zoo designers of immersion landscape have in mind. They want to reinstate human beings as actors in any natural environment. To them, the fixed image of nature provided by an immersion landscape seems dishonest. They would rather gain an understanding of the influences of interactions between humans and other beings upon the course of nature. Cook admonishes landscape architects to learn about the kinds of interactions that allow a healthy development of nature. Terraced rice fields, for example, are certainly not climatic plant communities in the sense of Frederick Clements, but in certain contexts they may nevertheless contribute to a healthy development of a natural environment populated by humans. In other contexts, this may be doubtful or simply untrue. When landscapes are conceived as historical processes evolving through time, studies of reception yield to studies of interactions between humans and their environment. An understanding of "emic" views of nature becomes necessary to account for human intentions and human interpretations of nature.[11] Aspects of nature respond to the human view of nature according to their own dynamics or willful actions, contributing to the view's reinforcement or its change. "Etic" views of nature, such as scientific views, can no longer claim an ontological superiority because nature and culture can no longer be viewed in a positivistic way. Or, to express the same idea as an image, nature and culture in the laboratory cannot be confused with nature and culture in the garden.

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[11] Social anthropologists have borrowed an opposition used in linguistics between "emic" and "etic" regard to their structural significance (*Webster's Dictionary,* 10th ed.). Linguists derived these two terms from a phonological distinction between phonemic and phonetic, calling attention to the differences between a phoneme and a physical sound. A phoneme comprises a class of sounds that are treated as identical from the perspective of a speaker in a given language despite some phonological differences. A phonemic perspective studies the sounds from the perspective of a speaker of the language, and a phonetic perspective studies their physical characteristics irrespective of their role in the language under study.

In social anthropology an "emic" perspective follows the native or insider's interpretation of practices, customs, or beliefs, whereas an "etic" perspective follows an outsider's interpretation. The origins of these distinctions are usually traced to the use of *emic* by Clifford Geertz and to the introduction of the word *etic* by Marvin Harris. See Marvin Harris, *Cultural Materialism: The Struggle for a Science of Culture* (New York: Random House, 1979). These two terms have been increasingly used to contrast the perspective of the social science researcher with that of his or her informer, as can be seen in a scathing conclusion by Marshall Sahlin:

> In its reliance upon symbolic reason, however, our culture is not radically different from that elaborated by the "savage mind." We are just as logical, philosophical, and meaningful as they are. . . . Still we speak as if we had rid ourselves of constraining cultural conceptions, as if our culture were constructed out of the "real" activities and experiences of individuals rationally bent upon their practical interests. The final alienation is a kind of de-structuration. Marx wrote that primitive society could not exist unless it disguised to itself the real basis of its existence, as in the form of religious illusions. But the remark may be truer of bourgeois society. Everything in capitalism conspires to conceal the symbolic ordering of the system—especially those academic theories of praxis by which we conceive ourselves and the rest of the world. A praxis theory based on pragmatic interests and "objective" condition is the secondary form of a cultural illusion, and its elaborate empirical and statistical offspring, the "etic" investigations of our social sciences, the intellectual titillation of an "emic" mystification.

Marshall Sahlin, *Culture and Practical Reason* (Chicago: University of Chicago Press, 1976).

This reasoning, starting with the contributions by Kelsch and Cook, stresses two aspects of reception studies that are easily overlooked in many visitor studies conducted by behavioral scientists. First, human interaction with nature takes place within social contexts, so that cultural descriptions of nature and of proper human behavior toward nature prevail over individual conceptions, as can be seen in Kelsch's story about Sonfist and daily users of *Time Landscape*™ in New York City. Second, scientific categories that describe nature can be totally misleading because they fail to consistently represent "emic" categories of thought. Clearly, this invites a renewal of joint research efforts by ecologists and anthropologists.[12] It does not help explain, however, how common concerns for nature can develop when populations share views about the right way to interact with nature that lead to depletion of its resources. The answer offered by the New Deal administration was federal regulation under scientific control, but this approach failed to maintain political momentum and to introduce a new ethos in American culture. The liberal thinkers of the 1960s proposed a new morality derived from scientific truths, and the contributions of landscape architects have helped spread this culture. However, as we have seen, there is no general agreement on the environmentalist culture to be disseminated, the scientific facts that support most current discourse have been disproved, and there is no evidence that landscape design may educate. Is it useless, then, to study responses to environmentalist landscapes?

Ito and Kawarada's answer to this question is both challenging and encouraging. It is challenging because they cast the question in a totally different perspective, and they develop an analysis alien to contemporary America. One can draw theoretical inspiration from their conclusions since direct application of the social and cultural practices they present is not feasible. Thus, they challenge American readers to exert their imagination. They are nevertheless encouraging because they describe a culture of nature lovers, in which a common concern and love for nature developed and was nurtured in landscape gardens to the exclusion of the environment at large. The example they provide of a long-term study of attitudes toward the environment in different cultures is, by itself, very suggestive of future directions for research. But one may also read in their text a recasting of the question about the efficiency of landscape architecture as a tool for disseminating environmental ideals. They ask, under which conditions do uses of designed landscapes contribute to the development of environmental awareness? A key aspect of their method is to contrast the histories of development and demise of this environmental culture. Confronting stories of success and failure limits the range of possible interpretations.

Conditions of uses may depend upon design features, but they do not depend upon those alone. In fact, they may be totally independent of any design feature. Political instability or new cultural attitudes toward nature may deeply affect relationships between humans and their environment, creating changes in ecological perspective. In a slightly ironic sense, this reality should serve as a reminder that landscape architects who want to contribute to the development of environmentalism should not see their action as distinct from other aspects of contemporary life, but as part of a broader social ecology. Great promise exists for those landscape architects who are able to contribute to the creative mass culture instead of trying, as their New Deal predecessors did, to teach and indoctrinate the public.

It is quite striking that the development of environmental awareness at the Heian court was not the result of a clearly designated will: it did not result from an imperial dictate or from the principles of a zealous class of priests. Rather, it seemed to develop from specific interactions between an ever-growing number of people sharing the same predicaments. These specific interactions involved both personal interaction with nature and social exchanges and interaction about nature. They not only established culturally defined links—cultural contests and poetic exchanges—between the environment at large and the dwelling environment, but also developed and disseminated a common culture of engagement with nature. Landscape gardens were not didactic instruments, but rather supports of multisensory experiences that allowed flights of imagination to recreate through symbolic language a sense of wholeness. Fragmentary impressions became united with broader experiences of nature and of life.

How could such developments in Japanese culture be of any help in thinking about contemporary environmentalism and American landscape architecture? No poetry-writing rituals encourage large groups of Americans to exchange symbolic praises of nature as a matter of polite behavior. But there are all sorts of activities that allow Americans to engage with nature in everyday life or on special occasions, and there are all sorts of opportunities for them to exchange their attitudes and feelings about nature among their friends or on a more formal basis. Public debates, disputes, and settlements about the value of changes in land use or landscape are important moments for the formation of new attitudes about nature. One may try to see how these different activities contribute to the development of a common culture and how this culture is reflected, or could be reflected, through personal action and engagement with nature in the dwelling environment. One may follow Cook's advice and start looking at actual interactions between people and nature in a variety of contexts, ranging from wilderness experiences to indoor gardening and spanning all sorts of tourist experiences, such as visits to gardens or landscapes created by artists. This may help teach about ecologies of designed landscapes, but it might achieve something else as well. One may start seeing how interactions with nature in everyday life may differ or connect with interactions with nature in places that are only visited occasionally. Moreover, one might learn how both kinds of personal experiences of nature can contribute to a broader cultural engagement with nature by the population at large—one that can evolve into an environmentalist culture in the United States. Thoughts growing out of such possibilities might lead landscape designers to creative leaps of imagination.

Jungles of Eden: The Design of American Zoos

Jeffrey Hyson

In 1978, the Woodland Park Zoo in Seattle, Washington, opened its new gorilla exhibit—the first example of what has become known as "landscape immersion" design (Fig. 1). Seeking to reconceptualize the zoo's very identity, director David Hancocks had asked the firm of Jones & Jones to develop a master plan for Woodland Park. As part of the plan's first phase, landscape architects Grant Jones, Jon Charles Coe, and their colleagues fashioned the now-famous gorilla forest, a stunning replica of the animals' native habitat that aimed to provide a stimulating, "natural" environment for the great apes while placing visitors seemingly within that habitat. In numerous ways—from the extensive use of appropriate vegetation to the clever manipulation of sight lines—the landscapes of Jones & Jones seemed worlds away from the bars and cages of traditional zoos. Furthermore, this transformation was not merely physical: according to its advocates, landscape immersion also represented an unprecedented shift in zoo philosophy, from the "homocentric" perspective that had long prevailed to a "biocentric" ethic more in tune with the environmentalism of the day. Not surprisingly, the Woodland Park plan clearly showed the influence of environmentalist thought, from its opening pages describing "an ecological design approach" with "nature [as] the norm" to a bibliography citing works by Aldo Leopold, Eugene Odum, and E. O. Wilson. Acclaimed by zoo professionals and landscape architects alike, the immersion exhibits of Jones & Jones pointed toward exciting new directions in the design of American zoos.[1]

Over the past two decades, landscape immersion has indeed emerged as the dominant style in zoo exhibitry, as anyone who has recently visited a zoological park can attest. Led by firms like CLRdesign, The Portico Group, and Design Consortium, zoo planners have fashioned a virtual world of uncannily realistic landscapes, from Amazonian rainforests and Louisiana swamps to

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The following abbreviations are used in the notes here: AAZPA—American Association of Zoological Parks and Aquariums; CPD—Chicago Park District; NYZP—New York Zoological Park; *P&R—Parks & Recreation;* PZG—Philadelphia Zoological Garden; SDZ—San Diego Zoo; SIA—Smithsonian Institution Archives; SLZP—St. Louis Zoological Park; and WCS—Wildlife Conservation Society.

[1] David Hancocks, foreword, and Grant R. Jones, preface to *Woodland Park Zoo: Long-Range Plan, Development Guidelines and Exhibit Scenarios,* by Grant R. Jones, Jon Charles Coe, and Dennis R. Paulson (Seattle: Jones & Jones for the City of Seattle, Department of Parks and Recreation, 1976); see also 44, 87–89, 162–63. The third named author, Dennis Paulson, was a biologist working with Jones & Jones. For helpful, if uncritical, surveys of the work of this important firm, see "Jones & Jones: Ideas Migrate . . . Places Resonate," *Process: Architecture* 126 (May 1995) (special issue, ed. Koichi Kobayashi); Anne Elizabeth Powell, "Breaking the Mold," *Landscape Architecture* 87 (October 1997): 120–29, 145–52.

1. Gorilla forest, Woodland Park Zoo, Seattle (from Michael Nichols, Keepers of the Kingdom *[New York: Thomasson-Grant and Lickle, 1996], 90)*

African savannas and Midwestern grasslands. These dramatic exhibits have helped spark a "renaissance" at American zoos, reflected not only in their increased popularity but, perhaps more significantly, in a supposedly growing concern for the earth's environment among zoo visitors. Fed by this atmosphere of rapid transformation, discussions of contemporary zoo design positively overflow with claims of revolution. In 1989, for instance, one zoo director proclaimed, "In the past 15 years, we've probably changed more than we've changed in the past hundred." An article in a recent issue of *Landscape Architecture* concurred, with David Hancocks even tracing this revolution to a specific profession: "It wasn't until landscape architects came on the scene that the shift toward a wider, more encompassing view . . . began to happen." In fact, claimed the article's author, over the past twenty years, America as a whole has become "a society moving toward a sound biocentric view of what our zoos should be." Beyond professional circles, the same rhetoric prevails, as tourist guides, photo essays, and coffee-table books all herald "the new American zoo." Looking back on previous generations of zoo design—the bad old days of bars, cages, and moats—planners and promoters find little more than good intentions, necessary first steps on the path to today's environmentalist Edens.[2]

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[2] Nancy Gibbs, "The New Zoo: A Modern Ark," *Time,* 21 August 1989: 50–53 (the quoted director is Cincinnati's Ed Maruska); Anne Elizabeth Powell, "Gardens of Eden," *Landscape Architecture* 87 (April 1997): 99, 92 (Hancocks's quotation). For a small sampling of the recent popular literature, see Sharon Begley, "Wilder Places for Wild Things," *Newsweek,* 17 July 1989, 58–59; Franz Maier and Jake Page, *Zoo: The Modern Ark* (New York: Facts on File, 1990); Cliff Tarpy, "New Zoos: Taking Down the Bars," *National Geographic,* July 1993, 2–37; Linda Koebner, *Zoo Book: The Evolution of Wildlife Conservation Centers* (New York: Forge, 1994); Anthony D. Marshall, *Zoo: Profiles of 102 Zoos, Aquariums, and Wildlife Parks in the United States* (New York: Random House,

Yet this triumphalist narrative is deeply flawed, in both its history and its conclusion. First of all, this same tale has been told again and again over the past century or more, as each new generation's directors and designers have proclaimed themselves more enlightened than their noble but misguided predecessors. In a constant refrain, zoo planners have pointed out the inadequacy and artificiality of earlier models, arguing instead for the more "natural" principles of their plans. But if we reexamine the history of American zoos and the assumptions and meanings that have informed their changing landscapes, we find, contrary to the proclamations of the "new zoo" boosters, that many zoological parks of the past century and a half did indeed present an "environmental" experience of wildlife and wilderness. Furthermore, beyond its narrative faults, this Whiggish history has also obscured serious problems within the environmentalist rhetoric that dominates contemporary zoo design and, indeed, much of contemporary landscape architecture in general. By making unnecessarily grand claims for today's "biocentric" designs, landscape architects and their supporters risk losing a critical consciousness that is essential to their art. Zoo designs, like all works of landscape architecture, are clearly cultural constructions, yet the rhetoric of environmentalism may encourage the dangerous view that immersion exhibits actually *are* nature. With similar claims of a mimetic relationship between landscape architecture and nature appearing throughout the profession in recent years, this case study of zoo exhibits may suggest important reconsiderations of the prevailing environmentalist discourse. While the best work of today's zoo designers is impressive, exciting, and invaluable to our appreciation of wildlife, their confident environmentalism is challenged when viewed in the historical context of the planning and the perception of zoos' "natural" landscapes. Such a challenge may, in turn, prompt a more reflective and historically informed practice of landscape architecture.[3]

The history of zoo design in the United States unfolds over several generations, stretching back some one hundred and forty years. Public zoological gardens had first emerged during the early nineteenth century in London, Paris, Berlin, and other European capitals.

1994); Allen W. Nyhuis, *The Zoo Book: A Guide to America's Best* (Albany, Calif.: Carousel Press, 1994); Michael H. Robinson and David Challinor, *Zoo Animals: A Smithsonian Guide* (New York: Macmillan, 1995); Michael Nichols, *Keepers of the Kingdom: The New American Zoo* (New York: Thomasson-Grant and Lickle, 1996).

[3] Although I often dispute their conclusions, I am indebted to those directors and designers who have previously analyzed the changing landscapes of zoological parks: David Hancocks, *Animals and Architecture* (New York: Praeger, 1971), esp. 105–48, 189–94; Jon Charles Coe, "Towards a Coevolution of Zoos, Aquariums and Natural History Museums," *AAZPA Annual Proceedings* (1986), 366–76; Kenneth J. Polakowski, *Zoo Design: The Reality of Wild Illusions* (Ann Arbor: University of Michigan School of Natural Resources, 1987), 17–24; and Jon Charles Coe, "The Evolution of Zoo Animal Exhibits," in *The Ark Evolving: Zoos and Aquariums in Transition,* ed. Christen M. Wemmer (Front Royal, Va.: Smithsonian Institution Conservation and Research Center, 1995), 95–128. See also James Fisher, *Zoos of the World* (London: Aldus Books, 1966), 158–83; Bob Mullan and Garry Marvin, *Zoo Culture* (London: Weidenfeld and Nicolson, 1987), 46–88; Melissa Green, "No Rms, Jungle Vu," *Atlantic Monthly,* December 1987, 62–78; and Lynne Iadarola, "Zoos," in *Encyclopedia of Architecture: Design, Engineering and Construction,* ed. Joseph A. Wilkes (New York: John Wiley & Sons, 1990), 5:419–39. More recent examinations of zoos include Patrick H. Wirtz, "Zoo City: Bourgeois Values and Scientific Culture in the Industrial Landscape," *Journal of Urban Design* 2 (February 1997): 61–82; Randy Malamud, *Reading Zoos: Representations of Animals and Captivity* (New York: New York University Press, 1998). For a broader consideration of American zoos in their cultural context, see Jeffrey Nugent Hyson, "Urban Jungles: Zoos and American Society" (Ph.D. diss., Cornell University, 1999).

Aspiring to a higher purpose than the simple amusement furnished by private menageries, the promoters of early Victorian zoos placed their scientific collections in formal, elegant gardens, amid picturesque walks, tasteful plantings, and charming architecture. Arranged taxonomically, captive animals were typically displayed in barred cages but frequently surrounded by lush vegetation. American observers at the time generally approved of European zoo design. Andrew Jackson Downing hoped that the proposed "New-York Park" would incorporate an animal collection modeled on London's Regent's Park Zoo, where the "strangest and wildest" creatures might be found "almost as much at home in their paddocks and jungles, as if in their native forests." A Philadelphia newspaper correspondent, urging his fellow citizens to support the nation's first zoological society, described at length the merits of the London Zoo:

> The visitor is led insensibly from one charm to another, and in each varied scene of trees and flowers is introduced to the animals most suited to the character of the view. Thus not only does the visitor see each animal as nearly as possible encircled by the flora to which it is most accustomed, but the animal itself forgets its forest home, when gazing on the surroundings so nearly akin to those it has lost, and lives in comfort and happiness.[4]

Clearly, to Victorian eyes, a fine zoological garden could indeed offer a compelling and convincing representation of nature and its inhabitants.

Similar claims for zoos' naturalism were heard during the 1860s and 1870s, as several American cities opened their own zoological gardens. These facilities ranged from small public menageries in New York and Chicago to larger, more elaborate parks in Philadelphia and Cincinnati. Again, contemporary observers frequently remarked on the striking resemblance of a zoo's enclosures to the animals' native environments. Guidebooks to Chicago, for example, praised the Lincoln Park bear pits, which, though "wholly artificial, . . . closely resemble the bear pits in the Rocky Mountains, built by nature." The director of the Central Park Menagerie claimed that a new prairie-dog village "affords the student of natural history opportunities to study and observe [the animals'] habits, under most favorable conditions." Such accolades sometimes extended to the grounds of an entire zoological garden. One opening-day review of the Philadelphia Zoo called its riverside site "particularly adapted by nature for the purpose desired," requiring "but a few touches of art to transform it into a fascinating scene of miniature forests, hills, ravines, and mountain water courses" (Fig. 2). For all their "artificiality," as modern landscape architects have al-

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[4] Andrew Jackson Downing, "The London Parks," September 1850; see also idem, "The New-York Park," August 1851, in *Rural Essays,* ed. George William Curtis (New York: Putnam, 1858; repr. New York: Da Capo Press, 1974), 553, 150–51; "C. W." to *North American and United States Gazette* (Philadelphia), 15 March 1860. On the history of Victorian zoos, see the essays collected in *New Worlds, New Animals: From Menagerie to Zoological Park in the Nineteenth Century,* ed. R. J. Hoage and William A. Deiss (Baltimore: Johns Hopkins University Press, 1996); and Harriet Ritvo, *The Animal Estate: The English and Other Creatures in the Victorian Age* (Cambridge, Mass.: Harvard University Press, 1987), 205–42.

2. Beaver pond and bridge, Philadelphia Zoological Garden, ca. 1870 (photo: courtesy of the Zoological Society of Philadelphia)

leged, the earliest American zoos attempted to replicate at least some elements of the natural environments their inhabitants had once known.[5]

The potential conflicts between zoos and parks, design and nature, were nowhere more evident than in the work of the landscape architect Frederick Law Olmsted. Throughout his distinguished career, Olmsted showed a pronounced ambivalence toward zoos, insisting on their incompatibility with pastoral city parks while simultaneously trying to place them creatively within the urban landscape. For example, he and his partner, Calvert Vaux, included no public menagerie in their Greensward plan for Central Park because they believed that a zoo, with its obtrusive buildings and milling crowds, would spoil the quiet landscape effects they had worked so hard to achieve. After the ramshackle Central Park Zoo more or less appeared, unbidden, in the early 1860s, Olmsted waged a thirty-year campaign to remove or relocate it. As part of this effort, he and Vaux produced their own "rural and park-like" plan for a zoological garden at Manhattan Square (where the American Museum of Natural History now stands). In the plans they drafted for Chicago's South Park in 1871, Olmsted and Vaux argued against the construction of a traditional zoological garden within the park grounds. Yet they also showed a real talent for the "inconspicuous arrangements" of naturalistic zoo design, laying out an ingenious deer paddock that would confine the animals by means of an underwater fence. Olmsted's attitude had not changed by 1885, when he drew up his plan for Boston's Franklin Park. Though he set aside "a Rambling Ground, with sheltered southwestern slopes . . . for a Zoological Garden," he plainly envisioned a naturalistic site for native animals, not a traditional zoo. As he later wrote to a member of the Boston Natural History Society: "Even a child would enjoy more peeping into an old rabbit warren than . . . staring into a cage of sulky lions."[6]

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[5] *Glossop's Street Guide, Strangers' Directory and Hotel Manual of Chicago, 1880–81* (Chicago: F. Glossop, 1881), 14; Board of the Department of Public Parks, *Report of Central Park Menagerie,* by William A. Conklin, doc. no. 102 (New York, 1886); *Philadelphia Press,* 1 July 1874.

Perhaps it is telling that most of Olmsted's zoo plans were never realized. Much to his chagrin, the animal collections in New York, Chicago, and Boston would remain bars-and-cages menageries for decades to come. Yet Olmsted's long and vigorous engagement with the problem of the urban zoo seems to have been forgotten by recent landscape architects, who claim to be the first of their profession to tackle this odd institution. To make matters worse, those accounts that do acknowledge Olmsted's work on zoological parks too often read him through environmentalist lenses. Historian Simon Schama, for example, sees the designer's long-standing opposition to the Central Park Menagerie as a protest against "the cheapening of the authentically natural landscape with ersatz wildness." Yet Olmsted, of all people, surely recognized that Central Park (like any other work of landscape architecture) was emphatically not an "authentically natural landscape"; rather, it, too, was an "ersatz wildness," thoroughly manipulated by his own masterly hand. Accordingly, when today's zoo designers uncritically describe their work as "authentic" and "natural," they would do well to reexamine the complex legacy of Frederick Law Olmsted. Through his persistent yet often fruitless attempts to reconcile the divergent "natures" of parks and zoos, Olmsted illustrated the difficulties in store for landscape architects who would work in American zoological parks.[7]

By the 1880s, a new phase in the history of zoo design was slowly beginning. Impatient with the persistence of bars and cages at American zoos, critics were pushing harder for more naturalistic enclosures. In an 1883 essay in *American Naturalist,* Theodore Link advocated "the rational construction of *enclosures*—not cages—liberal in extent and in strict accordance with the respective habits and instincts of the animals to be confined." A few years later, a writer for *Popular Scientific Monthly* approvingly quoted a London zoo official regarding the "responsibility" of modern zoological gardens to move away from "the old idea of keeping animals in small, cramped cages and dens" toward "conditions reproducing those of [the creatures'] native haunts." This call for more natural enclosures was answered by new zoological parks in Washington, D.C., and the Bronx, opened in 1891 and 1899, respectively. In a now-familiar generational claim of revolution, the founders of these parks clearly differentiated their projects from earlier menageries and zoological gardens in mission as well as design. Established by champions of the growing conservation movement, both the National and New York Zoological Parks were originally intended as breeding grounds for indigenous fauna. This emphasis on American species logically led to naturalistic designs, since native animals like bison, elk, and beaver could easily blend into the local flora. The very names of these new facilities—not gardens but *parks*—also signaled an important shift, as planners worked with much larger landscapes than were typical for urban zoos. Despite these innovations, however, the results were decidedly mixed, and both the successes and the shortcomings of these zoological parks suggest important revisions to the traditional narrative of zoo history.[8]

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[6] Frederick Law Olmsted, *Forty Years of Landscape Architecture,* vol. 2, *Central Park as a Work of Art and as a Great Municipal Enterprise* (New York: G. P. Putnam's Sons, 1928), 500–517; Olmsted, Vaux & Co., *Report Accompanying Plan for Laying Out the South Park* (Chicago: Evening Journal, 1871), 39, 40, 32; Cynthia Zaitzevsky, *Frederick Law Olmsted and the Boston Park System* (Cambridge, Mass.: Belknap Press, 1982), 69, 234 n. 50; Alexander von Hoffman, "'Of Greater Lasting Consequence': Frederick Law Olmsted and the Fate of Franklin Park, Boston," *Journal of the Society of Architectural Historians* 47 (December 1988): 343–44, 347. For a fine, brief study of the Central Park Menagerie during this period, see Roy Rosenzweig and Elizabeth Blackmar, *The Park and the People: A History of Central Park* (Ithaca: Cornell University Press, 1992), 340–49.

[7] Simon Schama, *Landscape and Memory* (New York: Alfred A. Knopf, 1995), 570. For an important, subtle examination of Olmsted and the "design" of natural landscapes, see Anne Whiston Spirn, "Constructing Nature: The Legacy of Frederick Law Olmsted," in *Uncommon Ground: Toward Reinventing Nature,* ed. William Cronon (New York: W. W. Norton & Company, 1995), 91–113. For other useful discussions of the urban parks movement, see David Schuyler, *The New Urban Landscape: The Redefinition of City Form in Nineteenth-Century America* (Baltimore: Johns Hopkins University Press, 1986), 59–146; Daniel Bluestone, *Constructing Chicago* (New Haven: Yale University Press, 1991), 7–61; Rosenzweig and Blackmar, *The Park and the People.*

The National Zoological Park grew out of the considerable efforts of William Temple Hornaday, a Smithsonian taxidermist who had witnessed firsthand the indiscriminate slaughter of American bison. Hornaday envisioned a sprawling national zoo, dedicated primarily to research and captive breeding, with only a small portion of the grounds open to the public. Even after Hornaday departed in an administrative dispute and Congress gutted the zoo's appropriation, supporters of the park continued to promote and praise its natural setting. Two generations of Olmsteds worked on a series of master plans that attempted to merge the zoo grounds into the surrounding landscape of Rock Creek Park. Architect Glenn Brown hoped that any improvements to the zoo would "conform and harmonize with nature" and that "artificial work [would] appear as natural outcroppings of nature." The 1902 McMillan Commission for improving Washington's landscape urged a similar policy, counseling against any construction "of a highly organized and formal character" and supporting the maintenance of the park's natural "picturesqueness." Whatever its administrative shortcomings, the National Zoological Park aspired to a more "natural" ideal

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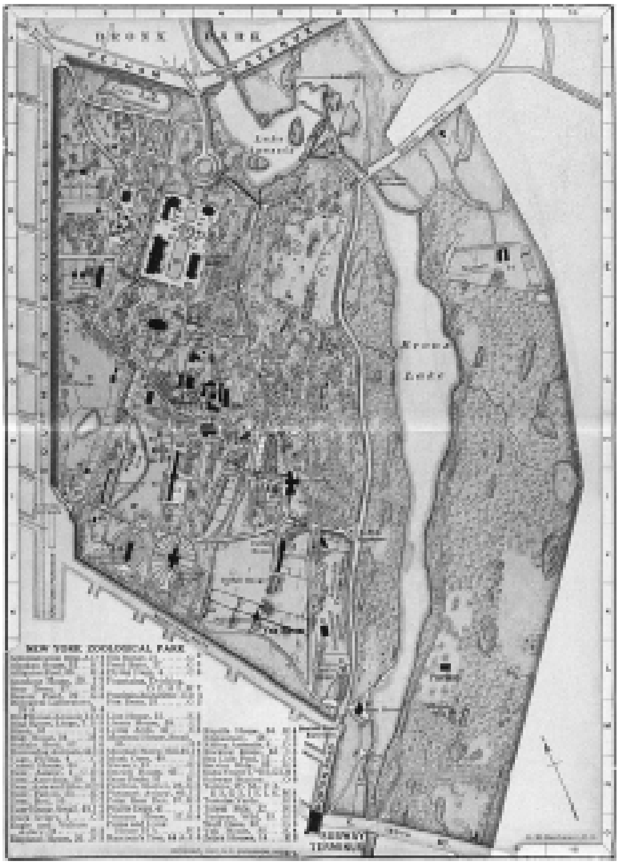
[8] Theodore Link, "Zoological Gardens: A Critical Essay," *American Naturalist* 17 (December 1883): 1229; Sir William Henry Flower, quoted in R. W. Shufeldt, "Zoological Gardens: Their Uses and Management," *Popular Science Monthly,* April 1889, 786 (Flower made his remarks in June 1887 at the annual meeting of the London Zoological Society). On the early history of these zoos, see Helen L. Horowitz, "The National Zoological Park: 'City of Refuge' or Zoo?" *Records of the Columbia Historical Society* 49 (1973–74): 405–29; Helen L. Horowitz, "Animal and Man in the New York Zoological Park," *New York History* 56 (October 1975): 426–55. For general histories of each park, see William Bridges, *Gathering of Animals: An Unconventional History of the New York Zoological Society* (New York: Harper & Row, 1974); *A Zoo for All Seasons: The Smithsonian Animal World* (Washington, D.C.: Smithsonian Exposition Books, 1979). On the sometimes testy relationship between the conservation movement and the zoo community, see Lisa Mighetto, *Wild Animals and American Environmental Ethics* (Tucson: University of Arizona Press, 1991), 67–70.



3. Plan for New York Zoological Park, ca. 1907 (from Official Guide Book to the New York Zoological Park *[New York: New York Zoological Society, 1928], inside front cover)*

in zoo landscape, and its planners hoped other parks would soon follow their lead.[9]

Near the end of the 1890s, an even larger "natural" zoo appeared in the wilds of the Bronx under the direction of William Hornaday himself. Aiming to improve on the Washington model, Hornaday again laid out a full-fledged zoological park, this time with the substantial backing of the private New York Zoological Society (Fig. 3). This true zoological park ("a purely American idea," Hornaday boasted) would feature "the expansion of all enclosures for animals, to the widest limit practicable," and "the consistent and skillful adaptation of nature's own handiwork to the peculiar wants" of each creature. In fact,

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[9] James Malcolm, "The Role of Frederick Law Olmsted and His Successors in Planning and Building the National Zoo," typescript, September 1979, box 15, folder 9, record unit 365, SIA (the reader should beware, however, of occasional factual errors in Malcolm's account); Glenn Brown, "A Suggestion for Grouping Government Buildings, Landscape, Monuments, and Statuary," in *Papers Relating to the Improvement of the City of Washington, District of Columbia* (Washington, D.C.: Government Printing Office, 1901), 68; Charles Moore, ed., *The Improvement of the Park System of the District of Columbia* (Washington, D.C.: Government Printing Office, 1902), 87. On Hornaday's career, see James Andrew Dolph, "Bringing Wildlife to Millions: William T. Hornaday, the Early Years, 1854–1896" (Ph.D. diss., University of Massachusetts, 1975); and the essays reprinted in *Saving Wildlife: A Century of Conservation,* ed. Donald Goddard (New York: Harry N. Abrams, in association with the Wildlife Conservation Society, 1995), 42–83.

Hornaday suggested that, thanks to the natural beauty of the Bronx Park site, "there is really very little for the landscape gardener to do." On the rolling grounds of the New York Zoological Park, a new era in zoo design seemed to be dawning.[10]

For all the grand claims of Hornaday and his fellows, however, the ideal of the zoological park—showing native animals in natural settings—would spread only slightly beyond Washington, D.C., and the Bronx, as attempts to imitate these models met with little success. In Boston, for example, a 1905 campaign to establish a large suburban zoological park, stocked only with hardy native species, failed to attract sufficient popular interest. As landscape architect Arthur A. Shurtleff noted in 1912, after drafting plans for a smaller, more traditional zoo in Franklin Park: "The experience of many cities . . . has shown that the public are not satisfied with a collection of native animals, but require as a supplement the well-known animals of the tropics." Critics also complained about the new zoological parks' "excess of space," insisting that planners and managers needed to remember the zoo's "spectacular aspect"—in other words, the visitor's desire to see animals up close. In time, similar objections would reach even the celebrated parks in Washington, D.C., and New York. Both zoos would see their original missions fade during the early twentieth century, largely in response to popular demand for more exotic, entertaining, and accessible animals.[11]

As with the first generation of American zoos, the story of turn-of-the-century zoological parks provides instructive comparisons for designers of today's "conservation centers." In the 1890s, as in the 1990s, zoo planners developed landscapes of striking naturalism, lush settings that would inspire both captive breeding and captive audiences. Both generations of designers described their work as revolutionary and unprecedented, and both eras saw a growing popular concern for the natural environment. Yet the turn-of-the-century parks ran into the persistent problem of public expectations, as visitors stubbornly maintained their own ideas of zoological entertainment. As a result, the conservationist claims of the 1890s zoos proved rather feeble in practice. Contemporary environmentalist designers would do well to bear these precedents in mind, remembering that landscape architects and the general public often hold markedly different ideas of what "natural" is.

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[10] William Temple Hornaday, "The New York Zoological Park," prospectus ca. March 1897, pp. 5, 6, 8, box 2, folder 19, record group 5, NYZP Director's Office (correspondence and subject files), WCS Archives. For published discussions of the zoo's plans, see Hornaday, "The New York Zoological Park," *Harper's Weekly,* 20 March 1897, 286; Hornaday, "The New York Zoological Park," *Century Magazine,* November 1900, 85–102; Hornaday, "The New York Plan for Zoological Parks," *Scribner's Magazine,* November 1909, 590–606. The landscape plan for the Bronx Zoo was essentially Hornaday's own, although landscape architects Warren H. Manning and H. A. Caparn served as consultants. The park's official architects were C. Grant LaFarge and George Lewis Heins. See Bridges, *Gathering of Animals,* 40–43, 46–47.

[11] "Zoological Park Plan for Boston," *Fresno Republican,* 15 February 1905, p. 36, press clippings (general), CPD Special Collections; Arthur A. Shurtleff, "Boston Zoological Park," *Landscape Architecture* 3 (October 1912): 1–2; F. G. Aflalo, "Travel Memories at the Zoo," *Living Age,* 15 October 1910, 142. For another criticism of large enclosures, see Arthur E. Brown to the Executive Committee of the Directors of the New York Zoological Society, 10 December 1895, reprinted in Report of Sub-Committee upon Plan, 2 January 1896, in box 2, folder 9, record group 5, NYZP Director's Office (correspondence and subject files), WCS Archives. On the changing missions of the National and Bronx Zoos, see Hyson, "Urban Jungles," chaps. 2 and 4.

A somewhat more successful movement toward naturalistic environments at American zoos came during the interwar period, with the introduction of moated, barless enclosures. Developed around the turn of the century by Carl Hagenbeck, a German animal dealer and circus impresario, barless exhibits were built around relatively simple principles. Animals were displayed in a series of large outdoor panoramas, amid rocks and trees (both real and artificial), that were vaguely reminiscent of the creatures' original habitat. Concealed moats separated animals from visitors and from each other, thus allowing zoogoers to see a number of species—often including predators and prey—within a single vista. Ideally, Hagenbeck claimed, barless displays would encourage visitors and animals alike to imagine themselves in the wild.[12]

Although a few influential directors and architects resisted the "Hagenbeckization" of American zoos, several parks adopted the new technique during the interwar years. In Denver, landscape architect S. R. De Boer called for the development of a "Habitat Zoo," generally designed on Hagenbeck's principles but adding a degree of verisimilitude by casting the naturalistic settings from actual landscapes in the Rocky Mountains. In St. Louis, construction on barless enclosures began in the late 1910s, with the first dens debuting in 1921. Similar moated displays followed in San Diego, where a pleasant year-round climate allowed even greater experimentation with outdoor exhibitions. In most of these cases, barless exhibits remained special attractions, exceptions to the prevailing rule of bars and cages. Yet several American zoos—particularly the new facilities in Detroit (1928) and Brookfield, Illinois (1934)—formulated comprehensive plans in the Hagenbeck style, visions of a future park that would offer zoogoers expansive views of realistic panoramas. By 1939, barless enclosures had become the industry standard, and Denver director Clyde Hill could praise these "sensational" exhibits as evidence that, "in the past twenty years, we have progressed more with the development of zoological parks than our predecessors did in twenty centuries."[13]

To advocates of moated displays, a barless zoo was a more natural zoo, a place where wilderness and city might come into closer contact. Bear dens in St. Louis embodied this welcome trend toward "more commodious quarters . . . representing bits of mountains, woodlands, plains, and marshes." Describing plans for the Brookfield Zoo, one official envisioned "a magnificent panorama . . . [with] all the wonderful wild creatures of the globe assembled, each in the habitat peculiar to itself, and yet all forming an harmonious whole." Visitors to the improved Philadelphia Zoo would enjoy "the wilderness at your doorstep" and leave "with the knowledge that for once you have seen the animals as they really are." Furthermore, supporters claimed that these more "natural" exhibits were vastly more humane than traditional zoo displays. San Diego's Richard Addison urged the abandonment of "the old style, iron-barred cage [that] belongs to the circus and traveling menagerie," not to "permanent zoological gardens." According to officials in St. Louis, the general public shared these humanitarian sentiments, "demanding that the animal have the carefree and happy existance [*sic*] which nature had granted it." John T. McCutcheon, president of the Chicago Zoological Society, even claimed that the planned Brookfield Zoo would be "a place that will make an animal glad he lives there."[14]

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[12] Hagenbeck's philosophy is best articulated in his own memoir, as well as that of his son Lorenz; for English translations, see Carl Hagenbeck, *Beasts and Men* (London: Longmans, Green and Company, 1909), and Lorenz Hagenbeck, *Animals Are My Life* (Letchworth, England: Garden City Press, 1956). My discussion of the Hagenbeck plan also relies on Herman Reichenbach, "Carl Hagenbeck's Tierpark and Modern Zoological Gardens," *Journal of the Society for the Bibliography of Natural History* 9 (April 1980): 573–85; Herman Reichenbach, "A Tale of Two Zoos: The Hamburg Zoological Garden and Carl Hagenbeck's Tierpark," in *New Worlds, New Animals,* ed. Hoage and Deiss, 51–62; David Ehrlinger, "The Hagenbeck Legacy," *International Zoo Yearbook* 29 (1990): 6–10; and Nigel Rothfels, "Bring 'Em Back Alive: Carl Hagenbeck and Exotic Animal and People Trades in Germany, 1848–1914" (Ph.D. diss., Harvard University, 1994), esp. 257–96. For other brief but intriguing assessments of the Hagenbeck design, see Helen L. Horowitz, "Seeing Ourselves through the Bars: A Historical Tour of American Zoos," *Landscape* 25, no. 2 (1981): 17, 19; and Coe, "The Evolution of Zoo Animal Exhibits," 105–7.

[13] De Boer quoted in Carolyn & Don Etter, *The Denver Zoo: A Centennial History* (Boulder, Colo.: Roberts Rinehart Publishers, in association with Denver Zoological Foundation, 1995), 46–62; W. F. R. Mills, "Moving a Mountain to the City for Denver's New Habitat Zoo," *American City* 19 (December 1918): 474–76; Minutes of the Zoological Board of Control, 17 September 1919, series 1, folder 26, SLZP Records, Western Historical Manuscript Collection, University of Missouri-St. Louis; "Natural Rock Settings," *P&R* 5 (Novem-

Yet once again, popular opinion would reshape the landscape of American zoos. Always catering to the public's desire to see, zoo planners often modified the more naturalistic enclosures, molding them to allow visitors a clearer view of the creatures within (Fig. 4). Brookfield's McCutcheon admitted as much: "Sometimes it will not be possible to reproduce the exact surroundings [of natural habitats], because there are numbers of animals that would hide themselves if they could. We must have them where they can be seen." Searching for ways to spread barless displays to smaller zoos, Clyde Hill suggested that "the feature of unobstructed vision [be] isolated from the usual pretentious background." In other words, however much they may have wanted to create naturalistic settings, designers had to recognize "the privilege of the public to see [the animals] at all times"—the continual demand for an entertaining show. Here again, we find a lesson in the construction

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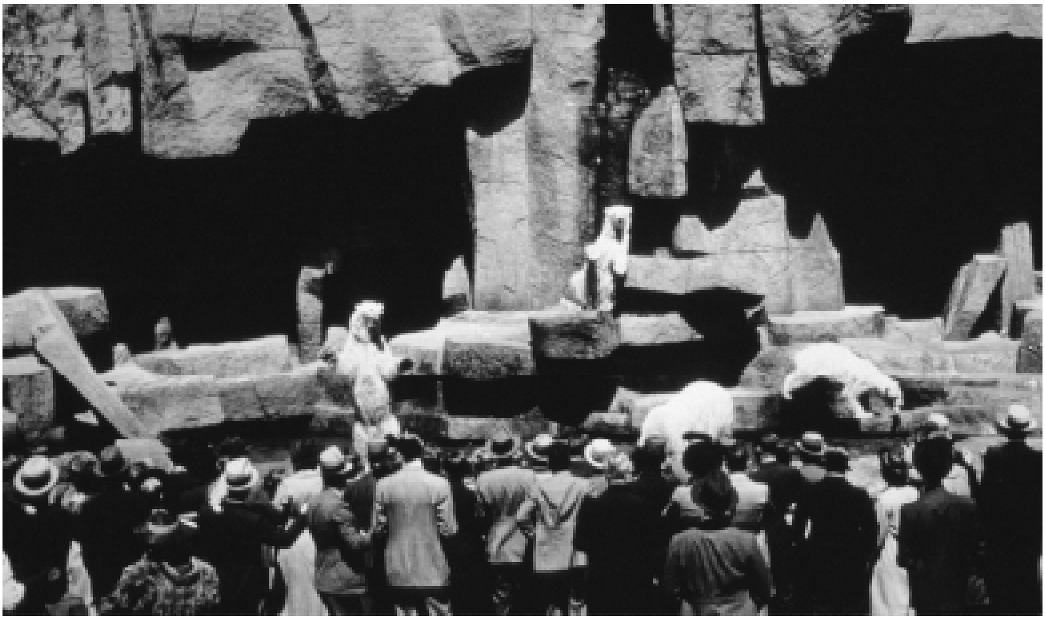
ber 1921): 179; Harry Wegeforth, "San Diego's New Zoo to Be One of Finest Found in Whole World," *San Diego Tribune,* 24 December 1921, scrapbook 1916–24, SDZ Library; "San Diego's Cageless Zoo," *Pictorial California,* March 1928, scrapbook 1925–31, SDZ Library; Andrea Friederici Ross, *Let the Lions Roar! The Evolution of Brookfield Zoo* (Brookfield, Ill.: Chicago Zoological Society, 1997), 19–23; "Fifth and Last Annual Message of Late President Peter Reinberg," in *The Forest Preserves of Cook County* ([Chicago]: Forest Preserve District of Cook County in the State of Illinois, 1921), 185; "Chicago Zoological Park," *Architectural Record* 76 (December 1934): 419–28; William A. Austin, *The First Fifty Years: An Informal History of the Detroit Zoological Park and the Detroit Zoological Society* (Detroit: Detroit Zoological Society, 1974), 9, 14; Clyde E. Hill, "The Zoo Parade," *P&R* 23 (September 1939): 38. For more on American adaptations of the Hagenbeck design, see Elizabeth Anne Hanson, "Nature Civilized: A Cultural History of American Zoos, 1870–1940" (Ph.D. diss., University of Pennsylvania, 1996), 260–82.

[14] Annual Report of the St. Louis Zoological Park (1919–20), p. 3, in series 1, folder 3, SLZP Records; Annual Message of President Daniel Ryan, 2 January 1922, Proceedings of the Commissioners of the Forest Preserve District, Cook County, Illinois, [Chicago], 1922, 23; "The Jungle Comes to Philadelphia," brochure, June 1936, box 5-A, PZG Archives; Richard A. Addison, "Showmanship and the Zoo Business," *P&R* 8 (November–December 1924): 131; Minutes of the Zoological Board of Control, 27 August 1928, series 1, folder 34, SLZP Records; John T. McCutcheon, address to the Union League Club, ca. January 1923, box 1, folder 11, John T. McCutcheon Papers, Archives and Manuscripts, Chicago Historical Society.



4. Moated polar bear exhibit, 1934, Chicago Zoological Park, Brookfield, Illinois (photo: courtesy of the Chicago Zoological Society)

and negotiation of zoo landscapes, the paradoxical relationship between design and nature, that today's environmentalist planners too often ignore or forget.[15]

As American zoos moved into the postwar period, however, both popular and professional enthusiasm for barless, rocky enclosures began to wane. During the fifties and sixties, many new exhibits adopted a style I call "sanitary modernism," combining abstract design modes and ultrahygienic conditions. A particularly compelling argument for sanitary modernism came from Heini Hediger, a Swiss zoo director and ethologist (specialist in animal behavior). In his volume *Wild Animals in Captivity* (1950), Hediger urged his readers, both scientists and laypeople, to abandon their "anthropomorphic conceptions" of a captive animal's supposed suffering. Instead, he proposed a more careful study of the "quality of the environment" at zoological parks, with particular attention to questions of natural behavior, rather than natural surroundings. As he put it—in a phrase that would anticipate recent discussions yet point toward much different designs—"we must act as zoocentrically as possible." While Hediger acknowledged the interwar trend toward more naturalistic enclosures, he found little to praise in that development:

> It is true that in the last few decades the idea has gained ground that the animal's space should, as far as possible, be arranged "naturally"; but mistaken opinions

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[15] McCutcheon quoted in "Great Modern Zoo Is Now Assured City," *Chicago Commerce,* 17 December 1921, p. 7; Clyde E. Hill, "What Price—Zoo Success?" *P&R* 11 (May–June 1928): 386; Frank Schwarz, "A Barless Zoo," *P&R* 8 (November–December 1924): 137. See also F. A. Gutheim, "Buildings for Beasts: Our Zoos in Transition," *American Magazine of Art* 29 (July 1936): 459–60.

> about this naturalness have been common. Intended naturalness more often than not appears as pseudo-naturalness. . . . Naturalness, in the sense of biologically correct type of space, is not the result of an attempt at imitation, but of an adequate transposition of natural conditions.[16]

With such intellectual support behind them, designers and directors at many American zoos felt free to construct exhibits that largely removed any semblance of an animal's natural habitat, so long as the creature's behavioral and medical needs were met. Some displays aspired to a modernist aesthetic, with sharp lines and geometric shapes providing artistic "frames" for the "pictures" of wildlife within. While the famous penguin pool at Regent's Park stands as the most noted expression of "zoo modernism," similar examples could be found at American zoos during the postwar years. In Detroit, for instance, a sculptor created "modern furniture for anthropoids," a new environment for the zoo's apes "where trees look like models of molecules, platforms like kidneys and chairs like mushrooms." At the same time, several cities and zoological societies commissioned master plans for new or renovated parks, and these comprehensive designs also owed much to architectural modernism. Boston's long-neglected Franklin Park Zoo was subjected to no less than three separate master plans during the fifties and sixties, with proposals ranging from the modernist monkey island and streamlined reptile house of Shurcliff and Shurcliff to the shopping-center-style "linear menagerie" of Perry Dean Hepburn & Stewart (Fig. 5) and the twelve-story mass of "exhibit galleries" from Peter Chermayeff.[17]

Alongside modernism, an increasing concern for more sanitary exhibits developed. Postwar improvements in animal care at zoos, from the introduction of tranquilizer guns to the appointment of resident veterinarians and zoologists, ironically reinforced the movement toward a clinical style of display. The result was what some critics have called the "bathroom" style of zoo design—bright, tiled cubicles, starkly lit, sparsely furnished,

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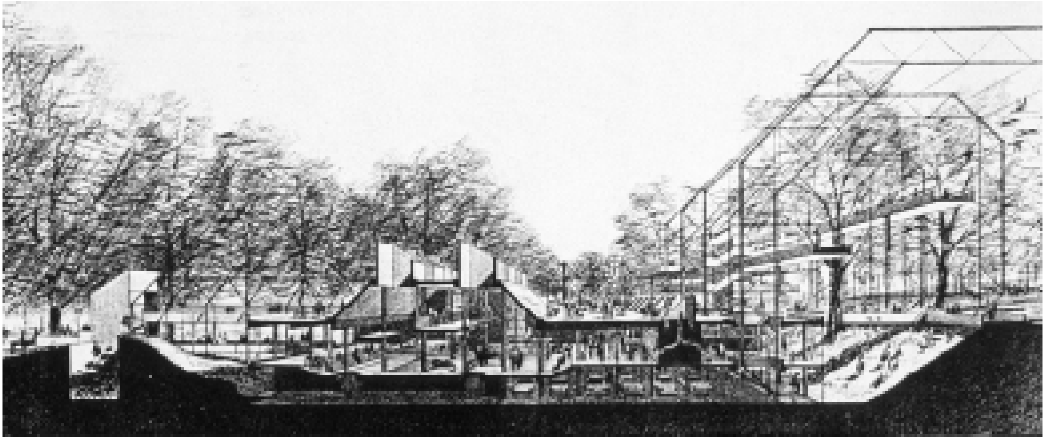
[16] H. Hediger, *Wild Animals in Captivity,* trans. G. Sircom (London: Butterworths Scientific Publications, 1950), 71–72; see also 95, 141. *Wild Animals in Captivity* was not an obscure academic tome. No less of a popular forum than *Time* magazine reviewed Hediger's book, quoting approvingly from his arguments against the sentimentalists who denounced zoos for depriving their inhabitants of nature's "freedom." "If properly housed, fed and entertained," *Time* noted, zoo animals "often lead happier, fuller lives than the humans who come to watch them" ("The Happy Prisoners," *Time,* 18 September 1950, 72). On the postwar construction boom at American zoos, see Raymond Thompson, "Zoo Construction in the United States," *P&R* 35 (June 1952): 24–25; "Municipal Zoos Are Booming," *American City* 72 (February 1957): 227; "Construction Boom Catches Up with the Nation's Zoos," *Architectural Forum* 115 (October 1961): 8, 10. Important documents for zoo planners in the 1950s included Arthur T. Wilcox, ed., *A Zoological Park: Why, Where, How,* Park Management Series, Bulletin 3 (East Lansing: Michigan State University, 1955); and "Zoos and Aquariums," Information Report no. 88, Planning Advisory Service (Chicago: American Society of Planning Officials, 1956).

[17] "Modern Furniture for Anthropoids," *Life,* 20 June 1955, 59; City of Boston Park Department, *Franklin Park Zoo: A Plan for the Future,* prepared by Arthur A. Shurcliff and Sidney N. Shurcliff (Boston, 1954); "Boston Plans Improved Zoo," *American City* 69 (September 1954): 131; Sidney N. Shurcliff, "A Plan to Revitalize Franklin Park Zoo in Boston," *Landscape Architecture* 45 (January 1955): 63–67; "Preview: Linear Menagerie," *Architectural Forum* 128 (May 1968): 102–3; "High-Rise Zoo," *Design* 241 (January 1969): 60. For other modernist zoo plans, see "Zoological Gardens by Alfred Caldwell," *Arts & Architecture* 77 (February 1960): 20–23; "Oakland's Dramatic New Zoo," *P&R* 43 (March 1960): 168–69; "New Zoo Is Good News," *Progressive Architecture* 46 (November 1965): 195–97. For one director's critique of zoo modernism, see Clyde E. Hill, "Animal Rights versus Human Rights," *P&R* 32 (August 1949): 478.



5. Proposed plan for Franklin Park Zoo, Boston, 1968 (sketch: Perry Dean Hepburn & Stewart)

and often sealed in unbreakable glass. Few zoos adopted these techniques more thoroughly than the one in Philadelphia. Although the zoo's Carnivora House (opened in 1951) included outdoor grottoes for lions and tigers, many visitors were just as impressed by the building's interior. A writer for the *Philadelphia Bulletin* described the "luxuries" now available to the zoo's big cats: "Green-tiled walls, stainless steel berths, running water, brilliant lighting, maternity suites and 'hospital' facilities. All this and air conditioning, too." Seven years later, similar features graced the new Monkey House, with its "attractive, tile-lined quarters" and "ideal, well-lighted conditions" for viewing. By 1965, when the Rare Mammal House opened, sanitation had become an attraction in its own right: "Visitors are intrigued . . . by the flushing system that washed the floors of the cages at regular intervals."[18]

Taken together, these instances of "sanitary modernist" design would certainly seem to confirm the familiar Whiggish story of ever more natural exhibits. Just a generation ago, the argument goes, zoos were still displaying wild animals in bare, tiled cells, with nary a leaf or a bush in sight: look how far we have come in only a couple of decades. Here again, though, we must step outside of the triumphalist narrative to consider the evolution of zoo design more broadly and contextually. Precisely because the clean, modernist exhibits of the fifties and sixties took zoos so far away from the naturalism (however romantic and abstracted it might have been) of the earlier moated displays, the subsequent development of landscape-immersion techniques during the seventies and eighties appeared far more innovative that it truly was. Today's most astute landscape architects acknowledge their debt to Hagenbeck and his followers, but they can also conveniently position themselves against the sanitary modernists, their most immediate predecessors and a group dominated by architects, their professional rivals. When immersion exhibits first appeared at zoos previously dominated by cold, clinical cages, the contrast could not have been more stunning. One wonders: what might the reaction have been had immersion design arrived on the heels of the boom in moated grottoes? Such potential continuities in the history of landscape architecture deserve our attention just as much as any self-proclaimed revolutions.

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[18] On Carnivora Building, see *Philadelphia Bulletin,* 8 April 1951, scrapbook 1950–52, PZG Archives; "Ultra-Modern Carnivora Building at Philadelphia Zoo," *P&R* 32 (September 1949): 536–37; *America's First Zoo* 3 (June 1951): 1–3; Commissioners of Fairmount Park, Eighty-fourth Annual Report (1951), 53. On Monkey House, see Commissioners of Fairmount Park, Ninety-first Annual Report (1958), 41. On Rare Mammal House, see Commissioners of Fairmount Park, Ninety-eighth Annual Report (1965), 24. Of course, Philadelphia was hardly the only zoo to employ the "bathroom" style. See, for example, "Baltimore Mammal House Is Building within a Building," *P&R* 37 (September 1954): 29–30.

Although the "bathroom" period of zoo design would last well into the 1970s, the pendulum had already begun to swing slowly back toward more naturalistic exhibits as early as the late 1950s. Entirely new parks, such as the Arizona-Sonora Desert Museum and the Milwaukee County Zoo, attracted considerable acclaim for their extensive natural habitat displays. During the late sixties, the Bronx Zoo opened two impressive buildings, the World of Darkness and the World of Birds, that re-created realistic habitats indoors—a development that foreshadowed the massive zoo rainforests of recent years. Competition from various commercial entertainments, including wildlife television programs and drive-through safari parks, also challenged zoo planners to present animals in more expansive and authentic surroundings. Although many of these "habitat" exhibits appear dated and unnatural today, they were praised at the time as "revolutionary" and "imaginative," welcome improvements over "the fusty, unsanitary relics" of decades past.[19]

The rise of the contemporary environmentalist movement accelerated this revival of naturalistic zoo design. Not surprisingly, many environmentalists condemned zoos as prisons of heartless artificiality, where captive animals lived a desperate existence in wholly unnatural surroundings. Famed zoologist Desmond Morris decried what he called "the shame of the naked cage"; animal-rights activists advanced their cause under headlines like "U.S. Zoos Often Chambers of Horror." In one of the most influential essays in the literature on "zoo culture," psychologist Robert Sommer charged that the "homocentric environmental ethic" of traditional animal exhibits had turned zoological parks into places of tragic miseducation, where visitors learned to consider themselves superior to their fellow creatures. For their part, landscape designers offered much of the same environmentalist critique. Participants in a 1967 roundtable for *Landscape Architecture* pronounced the traditional zoo "antiquated" and "obsolete," part of "a bygone era" that exploited "the wild animal for human amusement." In Ian McHarg's *Design with Nature,* the zoo even became a virtual symbol for all synthetic landscapes, a convenient analogy for our alienation from the natural world.[20]

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[19] See Eugene J. Walter Jr., "Zoo People Give a Damn," *Venture* 8 (July–August 1971): 32–35, 60–71; Fairfield Osborn, "A Zoo of Zoos," *New York Times Magazine,* 4 November 1962, p. 72; "News in Zoos," *Time,* 22 May 1964, 54; and Angus Wilson, "Confessions of a Zoo-Lover," *Holiday* 35 (June 1964): 18. Lawrence Curtis, "The Rain Forest at Ft. Worth Zoo," *P&R* 41 (September 1958): 394–95; Mervin Larson, "Living Dioramas," *AAZPA Annual Proceedings* (1965), 33–34; John S. Margolies, "Multimedia Zoo," *Architectural Forum* 130 (June 1969): 86–91. On the growth of safari parks, see "The Animal Parks Are Roaring Ahead," *Business Week,* 8 July 1972, 23–24; "We've Got Gnus for You," *Newsweek,* 31 July 1972, 48–49.

[20] Desmond Morris, "The Shame of the Naked Cage," *Life,* 8 November 1968, 70–80; Desmond Morris,

Yet as much as environmentalists attacked zoos as exploitative and unnatural, the movement also paradoxically looked to zoological parks (if properly designed) as potential sites of inspiration and education, "links between the modern world and the receding domain of nature." Landscape architect Jean Allen Mather foresaw a "new concept of animal park approximating a natural ecological balance"; such a park, suggested planner Julia Allen Field, might serve "as a channel for information about our environmental crises . . . and as a powerful way to promote a land ethic." McHarg himself took up this challenge with Pardisan, a planned 741-acre facility near Tehran, where "universal," "aquatic," and "terrestrial" parks would combine to present "'all of nature' in one great center." In North America, the seventies witnessed a boom in so-called utopian zoos, sprawling complexes of several hundred acres often linked by trams or monorails (Fig. 6). From San Diego to Toronto, Minneapolis to Miami, these elaborate facilities provided animals with vast territories to roam and offered visitors yet another version of zoo naturalism. Tellingly, the creators of these designs frequently invoked the rhetoric of environmentalism, asserting their value for education, conservation, and captive breeding. Some of these claims of environmental correctness boasted more style than substance, as buzzwords like "ecology," "ecosystem," and "interdependence" sprang up like weeds in mission statements and master plans. Yet the general public clearly appreciated these developments; a 1975 survey by sociologist Neil Cheek found that many visitors actually "felt closer to nature at the zoo," that "the zoo helped them feel how beautiful life is." By the mid-1970s, it seemed, environmentalism and zoos were beginning to find some common ground.[21]

Since then, of course, landscape immersion has supposedly revolutionized the design of American zoos. Yet the historical record clearly reveals that key elements of immersion's techniques and philosophy have existed for decades, coming and going on the tides of professional interest and popular opinion. This fact should not discount the value of recent developments, but it should challenge the arguments of today's designers, particularly their habit of divorcing visions from visitors, claims from contexts. In proclaim-

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"Must We Have Zoos?" *Reader's Digest,* March 1969, 195–200; Jack Anderson, "U.S. Zoos Often Chambers of Horror," *Washington Post,* 26 July 1971, p. B11; Joan Bannon, "Today's Zoos: 'Animal Ghettos,'" *Washington Post,* 31 August 1971, p. B6; Peter Batten, *Living Trophies* (New York: Thomas Y. Crowell Company, 1976); Robert Sommer, "What Do We Learn at the Zoo?" *Natural History* 81 (August–September 1972): 26; "The Obsolete Zoo vs Future Animal Parks," *Landscape Architecture* 57 (January 1967): 119 (the quoted speaker is Julia Allen Field; the other participants were Jean Allen Mather and Robert Mather); Ian McHarg, *Design with Nature* (New York: Natural History Press, 1969), 103.

[21] R. Michael Schneider, "The Zoo's Changing Role," *P&R,* n.s., 4 (September 1969): 43; Mather and Field, quoted in "The Obsolete Zoo vs Future Animal Parks," 111, 119; "'All Is Here' at Microcosmic Zoo-Park for Tehran," *Landscape Architecture* 64 (January 1974): 58. Cheek, quoted in Emily Hahn, "Why Zoos?" *New York Times Magazine,* 23 February 1975; his study appeared as Neil H. Cheek Jr., "Sociological Perspectives on the Zoological Park," in *Leisure and Recreation Places,* ed. Cheek, D. R. Field, and R. J. Burdge (Ann Arbor: Ann Arbor Science Publications, 1976). For useful surveys of early-1970s designs, see "Things Are Changing at the Zoo, Too," *Changing Times* 24 (February 1970): 24–25; "The New Zoos," *Newsweek,* 1 June 1970, 58; "Zoo Story," *Time,* 18 October 1971, 54; Walter, "Zoo People Give a Damn"; and Barbara Ford, "Creature Comforts at the Zoo," *Saturday Review,* 5 August 1972, 40–48. For a prime example of eco-speak, see *Minnesota Zoological Garden: Mirror to the Environment* (St. Paul: Minnesota Zoological Board, 1970).

6. Monorail at Asian plains exhibit, San Diego Wild Animal Park (photo: Ron Garrison, courtesy of Zoological Society of San Diego)

ing a new age of environmentalist design, landscape architects must still remember that the simulated "nature" they create is a lived experience, not an abstract ideal. After all, the most realistic presentations of natural habitats are utterly meaningless if zoo planners fail to consider the reception of their work. If an epoxy tree falls in a landscape immersion forest and no visitor is there to hear it, does it make a sound?

To put it another way: How truly "environmentalist" are today's zoo designs—and how "environmentalist" should they be? Environmentalism, of course, suggests not just the celebration of nature but advocacy and instruction, the promotion of an increased consciousness about the natural world around us. Proponents of the progressive narrative have argued vigorously that immersion exhibits are indeed profoundly environmentalist, since they not only replicate natural habitats to an unprecedented degree but also educate zoogoers—allegedly for the first time ever—about conservation and biological diversity. In the recent words of *Landscape Architecture* magazine: "We may applaud ourselves for the profound shift in thinking we have effected—a shift that has established our zoos as more than windows on prevailing attitudes. They are now, without question, agents of social change."[22]

But this claim simply does not hold up. Although visitor studies are often inconsistent, both scientific and anecdotal observations suggest that zoogoers do not learn nearly as much as designers claim they do. To be sure, as Cheek's survey indicated, many visitors feel "closer to nature" at a zoo, yet this closeness seldom leads to enlightenment or education about the environment. In his exhaustive studies of American attitudes toward animals, Stephen Kellert has discovered "considerable affection and concern for wildlife among zoo visitors, but less knowledge and ecological understanding than one might expect or hope for, and certainly far less than found among other key wildlife interest groups." Another recent survey found that zoogoers generally appreciated a park's informal, social atmosphere more than its educational or environmental features. The few studies evaluating the educational effectiveness of immersion exhibits are, at best, inconclusive. While such designs may encourage visitors to stand quietly, even reverentially, within the replicated environment, zoogoers still tend to respond most immediately to an animal's appearance and behavior rather than its setting. The ecological exactitude that planners so admire in contemporary exhibits seems to be utterly lost on most visitors—a situation that seriously compromises any claims for the educational power of environmentalist landscape architecture.[23]

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[22] Powell, "Gardens of Eden," 99.

To complicate matters further, more than a few zoogoers actively dislike immersion exhibits because such designs too often conceal the very animals they came to see. This is, of course, a venerable complaint, stretching back to the days of Hornaday and Hagenbeck. Yet many designers who concentrate on environmental accuracy only grudgingly acknowledge the public's long-standing demand for access and visibility. Responding to David Hancocks's call for more rigorously naturalistic environments, three London zookeepers reminded him that "people primarily come to a zoo to see living animals, and not fibre-glass reconstructions of the Earth's habitats." A 1991 study of visitors' attitudes confirmed that zoogoers consistently prefer "close and easy viewing of active animals," a situation that is generally "difficult to achieve in naturalistic exhibits." Some designers have tried to enhance the appeal of immersion exhibits by building them around narratives of ecological awareness or habitat conservation. Yet such framing devices still work against what has always been a zoo's most basic appeal—the inherent, amazing, and often inexplicable allure of individual wild animals.[24]

In addition, the educational emphasis that has accompanied this environmentalist turn may be leading zoos away from their most enduring and successful mission—popular entertainment. In their eagerness to train visitors in the ways of environmentalism, directors and designers sometimes drift toward arrogance or condescension, conveying an implicit sense that they know what's best for the average zoogoer. For example, the National Zoo's recent ventures into text-heavy, museum-style exhibits—part of its self-proclaimed transition into a "BioPark"—have frequently met with public disapproval. Said one visitor: "There's too much information. If people wanted that they'd go to the library. People come to see the animals." Jon Coe's perceptive critique of the utopian zoos of the 1970s applies just as easily to the BioParks of the 1990s: "Planners had ignored what Hagenbeck understood—people came to the zoo as an attraction. Education and conservation are secondary concerns to the family planning their weekend outing." By paying more attention to history, designers might realize that zoos have always appealed to families seeking pleasant, outdoor recreation and that any attempts to alter those expectations are made at a planner's peril.[25]

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[23] Stephen R. Kellert, "Zoological Parks in American Society," *AAZPA Annual Proceedings* (1979), 93; Stephen R. Kellert, *The Value of Life: Biological Diversity and Human Society* (Washington, D.C.: Island Press, 1996), 83–89; Robin Whittall, "Roles and Perceptions of Zoos and Aquariums" (master's thesis, University of Toronto, 1990); Jon Charles Coe, "Landscape Immersion—Origins and Concepts in Landscape Immersion Exhibits: How Are They Proving As Educational Settings," *AAZPA Annual Proceedings* (1994), 208–13; Joyce Shettel-Neuber, "Second- and Third-Generation Zoo Exhibits: A Comparison of Visitor, Staff, and Animal Responses," *Environment and Behavior* 20 (July 1988): 452–73. For other useful visitor studies, see Beverly Serrell, "Looking at Zoo and Aquarium Visitors," *Museum News* 59 (November–December 1980): 36–41; Steven Bitgood et al., "How Do People Perceive Museums, Parks, and Zoos?" *Visitor Behavior* 2 (1987): 9–10; Denise E. Lessow, "Visitor Perceptions of Natural Habitat Zoo Exhibits" (Ph.D. diss., Indiana University, 1990).

[24] David Hancocks, "So Long, Old Zoo," *BBC Wildlife* 9 (June 1991): 442; "View from the Zoo" (letter from Paul Pearce-Kelly, Mike Clark, and Sarah Christie), *BBC Wildlife* 9 (August 1991): 582; David Churchman and George Marcoulides, "Affective Response to Zoo Exhibits," *AAZPA Annual Proceedings* (1991), 522;

Beyond these questions of perception and reception, the environmentalist turn in zoo design has also led landscape architects toward a disturbing decline in critical self-consciousness. As Anne Whiston Spirn has argued: "[T]he works of the profession of landscape architecture are often not 'seen' [by the general public], not understood as having been designed and deliberately constructed." Ironically, environmentalism may have extended this blindness to landscape architects themselves. Zoo landscapes are among the most obviously constructed works in the discipline, since they are always, at their core, representations—in other words, *re*-presentations—of wild habitats. Yet while some designers readily admit that their creations are simply "high stagecraft," other planners imply a genuine equivalence between their designs and nature. David Hancocks has posited, "If you are going to present animals why try to improve on nature? Isn't nature itself the 'Best Show on Earth'?" Asked if landscape immersion might soon yield to another generation's ideas, Grant Jones replied, "It's not passé. Nature never ought to be a fad."[26]

In both professional and popular literature, this equivalence of design and nature is frequently reinforced through a clever rhetorical gambit, by which observers attest to a landscape's "authenticity" by mistaking it for the wild. In a typical example, a reporter for *National Geographic* offers a detailed description of a tropical rain forest, only to reveal that "we are not in Brazil, Borneo, or West Africa, but close by the Missouri River," at the Lied Jungle in Omaha's Henry Doorly Zoo. Photographic images have proved especially susceptible to this kind of rhetorical manipulation. Zoo planners were delighted to learn that when Dian Fossey showed photos of the Woodland Park gorillas to her colleagues in Rwanda, the field scientists

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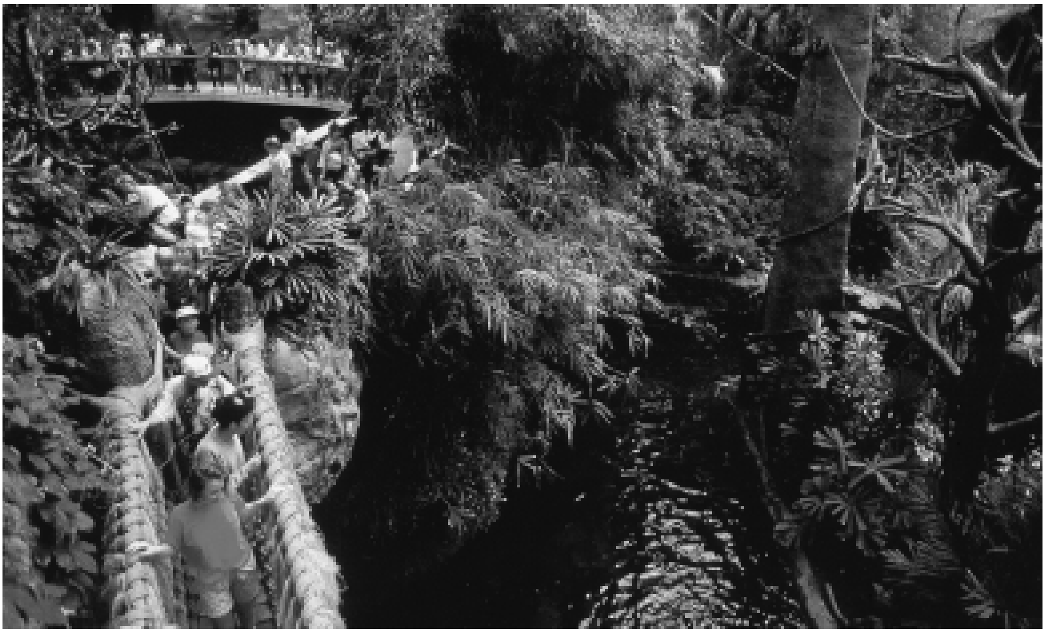
Stephen St C. Bostock, *Zoos and Animal Rights* (London: Routledge, 1993), 116–17. For additional critiques of the claims for immersion exhibits, see Vicki Croke, *The Modern Ark: The Story of Zoos, Past, Present and Future* (New York: Scribner, 1997), 97–98; Mullan and Marvin, *Zoo Culture,* 60.

[25] Michael H. Robinson, "Towards the BioPark: The Zoo That Is Not," *AAZPA Annual Proceedings* (1987), 678–82; Christine M. Broda-Bahm, "Think Tank: Evolution and Revolution," *Museum News* 76 (July–August 1997): 49; Jon Charles Coe, "Future Fusion: The Twenty-First Century Zoo," in Nichols, *Keepers of the Kingdom,* 106, 109; Michael D. Kreger and Joy A. Mench, "Visitor-Animal Interactions at the Zoo," *Anthrozoös* 8 (1995): 143; Syd Butler, "Message from the Executive Director," *AZA Communiqué* (May 1998): 2. Needless to say, a strong focus on entertainment carries its own problems. For an astute critique of zoological amusements, see Susan G. Davis, *Spectacular Nature: Corporate Culture and the Sea World Experience* (Berkeley: University of California Press, 1997).

[26] Spirn, "Constructing Nature," 91; Jon Coe, quoted in Powell, "Gardens of Eden," 93–94; David Hancocks, "A Matter of Presentation," *AAZPA Annual Proceedings* (1982), 174; Jones, quoted in Elise Vider, "Environmental Theater," *Metropolis* 9 (June 1990): 89.



7. *Opening day crowds at Lied Jungle, Henry Doorly Zoo, Omaha (from Nichols,* Keepers of the Kingdom, *11)*

thought the pictures had been taken in the wild. When individuals in a widely cited study of visitor perceptions were shown a series of slides of animals in wild, naturalistic zoo, and caged zoo environments, they gave more favorable ratings to those animals shown without visible barriers, those seen within a "perceptual context . . . totally free of contradictory clues." In such an ideal design, suggests Jon Coe, "the entire setting looks, smells, and feels as if one left the zoo and entered the African savanna."[27]

Yet for actual zoogoers, such extraordinary suspensions of disbelief seem nearly impossible, even in the most authentic replica of a natural environment (Fig. 7). As journalist Vicki Croke smartly put it: "Has anyone really been 'immersed' in a zoo exhibit and forgotten even momentarily that they are in a zoo in the middle of the city?" When visitors stand before an exhibit, their gaze takes in much more than animals posing amid luxuriant foliage; extraneous elements, from identification labels to exit signs, inevitably intrude. Furthermore, the whole zoo-going experience is not limited to the sight of wild creatures. It also embraces the sound of screaming children, the smell of popcorn and hot dogs, the feel of aching feet. The landscape of zoos does not just exist as a pristine re-creation of nature: it is a "happening," an ongoing public event subject to negotiation and contradiction. By more explicitly recognizing this experiential dimension of their projects, landscape architects would necessarily sacrifice the environmentalist equation of nature and design. Yet in so doing, they might also encourage a more critical appreciation of the "work" of designed landscapes by visitors and planners alike.[28]

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[27] Tarpy, "New Zoos," 9; Greene, "No Rms, Jungle Vu," 62; Ted Finlay, Lawrence R. James, and Terry L. Maple, "People's Perceptions of Animals: The Influence of Zoo Environment," *Environment and Behavior* 20 (July 1988): 526; Jon C. Coe, "Design and Perception: Making the Zoo Experience Real," *Zoo Biology* 4 (1985): 206. See also David Hancocks, "Seeking to Create Illusions of Wild Places: Master Planning Guidelines for the Melbourne Zoo," *Landscape Australia* 11 (August 1989): 258–67.

Finally, the assumptions behind environmentalist rhetoric too often lead to a Panglossian view of immersion exhibits, a sense that we are now building the best of all possible zoos. This idealized vision of a revolutionary present has recurred throughout the history of American zoo design, and the arguments of the 1990s are no different. Yet environmentalism seems to foster a particularly extreme celebration of contemporary design, most notably through the trope of the modern zoo as a sort of paradise, an all-too-common image in recent literature. Searching for the "future animal park," Robert and Jean Allen Mather envision nothing less than a "peaceable kingdom." Jon Coe and Terry Maple describe immersion exhibits for apes as "approaching Eden." A new rain forest in Woodland Park is labeled an "Eden-in-progress." And without a trace of irony, the editors of *Landscape Architecture* title an article on recent zoo designs "Gardens of Eden." Yet this vision of zoo-as-paradise, with contented creatures enjoying lives of apparent freedom, effectively obscures the very identity of this strange institution. In the words of journalist and landscape designer Alexander Wilson: "Do the new designs somehow disguise the confinement that is the primary fact of a zoo?...Can we really see ourselves looking?" In a 1991 essay for *Harper's,* Charles Siebert took this provocative point even further:

> Somehow, by the end of a day of peering into deep, landscaped "natural habitats"—looking for the animals we've brought from so far away only to place too far away to really see—I'd decided that it was far less depressing to proceed, as one did in an old zoo, from the assumption of the animals' sadness in captivity than to have to constantly infer the happiness we've supposedly afforded them in our new pretend versions of their rightful homes. The former premise, at least, seems less of a lie about what a zoo is.[29]

What Siebert objects to here is the lack of critical consciousness. By trying too hard to tell the proper environmentalist stories, we risk forgetting what a zoo is. And by claiming that environmentalist designs truly are an Edenic nature, we risk forgetting how landscape architecture really works.

If, then, the history of environmentalism and zoo design is so much more complicated than previously thought, why has the triumphalist narrative gained an almost unquestioned acceptance? In part, the story that contemporary designers tell is simply the classic autobiography of a profession, one in which each generation's experts claim to surpass their predecessors, and these claims eventually become self-fulfilling prophecies. Promotional needs have also reinforced the Whiggish narrative. To stay competitive in today's leisure marketplace, zoos must create and publicize new exhibits at a furious pace; in the process, public relations frequently outpace actual achievements.

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[28] Croke, *The Modern Ark,* 80. Thanks to Michel Conan for the idea of zoos as "happenings."

[29] Mathers quoted in "The Obsolete Zoo vs Future Animal Parks," 111–12; Jon Charles Coe and Terry Maple, "Approaching Eden: A Behavioral Basis for Great Ape Exhibits," *AAZPA Annual Proceedings* (1984), 117–28; Jon Charles Coe and Terry Maple, "In Search of Eden: A Brief History of Great Ape Exhibits," *AAZPA Annual Proceedings* (1987), 628–38; Paul Roberts, "The 'Stealth' Rainforest: Eden in Progress?" *Landscape Architecture* 84 (January 1994): 88–91; Powell, "Gardens of Eden"; Alexander Wilson, *The Culture of Nature: North American Landscape from Disney to the Exxon Valdez* (Cambridge, Mass.: Blackwell, 1992), 254; Charles Siebert,

Perhaps most of all, we *all* contribute to the triumphalist narrative through our collective memories of the "bad old days" at the zoos of our childhoods. Every zoogoing generation has these same memories—images of the zoo's landscape before a Hornaday or a Hagenbeck or a Hancocks arrived on the scene. We reluctantly admit that we enjoyed our trips to "the old zoo," but we also recall the odors in the monkey house, the pacing of the polar bears, the echoing roars in the carnivora building. Armed with these memories, we easily accept the argument that today's exhibits are more natural, more realistic, more environmentalist than ever before. Yet we rarely stop to wonder what we really mean by "natural," "realistic," or "environmentalist," or how previous generations of visitors and designers may have defined those same terms. Only when we step outside our own generational experience can we begin to understand the full, complex story behind the changing landscape of American zoos.[30]

The history of American zoo design does not lead us inexorably to "Gardens of Eden," as some might have it. Looking back over the past one hundred and forty years, we cannot plot a straightforward path from artificial menagerie to natural zoological park to environmentalist conservation center. Instead, we must follow a more tortuous route, making wrong turns, reaching dead ends, following our old steps over and over again. By locating environmentalist landscape architecture within this historical context, we can better understand where our ideas of design and nature have come from—and where they might be going. Likewise, after surveying over a century's worth of zoogoing, we do not see the visiting public evolving from simple gawkers to intrepid explorers to sophisticated conservationists. Instead, we find visitors repeatedly reshaping the zoo-going experience, as designers revise or even abandon one paradigm after another in their efforts to meet the public's preferences and expectations. By examining these ongoing issues of reception, we can better predict what environmentalist landscape architecture can and cannot accomplish. In short, the landscape of conflicts and contradictions that we encounter in zoos bears no resemblance to a well-manicured paradise. Rather, we find ourselves in metaphorical jungles, rich in historical resources but often difficult to navigate and interpret. By mapping our way through those jungles, we will come to appreciate their evolution—and their future—more completely, intelligently, and productively. And, in time, this historical appreciation may even foster a contemporary understanding of the natural world that environmentalism so vigorously demands.[31]

"Where Have All the Animals Gone?" *Harper's,* May 1991, 54. For a suggestive discussion of the zoo as Eden, see Boria Sax, "Are There Predators in Paradise?" *Terra Nova* 2 (winter 1997): 59–68. For other examinations of nature as Eden, see Candace Slater, "Amazonia as Edenic Narrative," and Carolyn Merchant, "Reinventing Eden: Western Culture as a Recovery Narrative," both in *Uncommon Ground,* ed. Cronon, 114–31 and 132–59, respectively.

[30] On the occasional excesses of zoo public relations, see Croke, *The Modern Ark,* 15–16, 75. On the place of zoos in our collective memory, see Tarpy, "New Zoos," 11.

[31] For an oft-reprinted chart (by an esteemed zoo director) that illustrates the "ever-upward" approach to zoo history, see George B. Rabb, "The Changing Roles of Zoological Parks in Conserving Biological Diversity," *American Zoologist* 34 (1994): 162; see also Koebner, *Zoo Book,* 63; and Ross, *Let the Lions Roar!* 217.

Environmental Therapy for Soil and Social Erosion: Landscape Architecture and Depression-Era Highway Construction in Texas

Gregory T. Cushman

> Politically speaking, the best of all landscapes, the best of all roads, are those which foster movement toward a desirable social goal.
>
> —John Brinkerhoff Jackson, *Discovering the Vernacular Landscape*

The Great Depression of the 1930s dramatically affected life in Texas. Although economic downturn arrived more slowly and with less obvious severity in Texas than in the industrial states of the Northeast, factories, stores, and banks still shut their doors, crop and livestock prices plummeted, and many families lost nearly everything. During the winter of 1933 and 1934, one-fifth of Texans—over one million people—needed government relief payments to survive. State and local governments in Texas, forced to slash their budgets, could not meet this massive demand for relief. Many county governments fell into default under the debt they had accumulated to build local roads. Meanwhile, severe drought and flood besieged those who depended on production from the land and the rural transport infrastructure, as a rising tide of rural workers and tenant farmers from Texas joined the first phases of an exodus from America's rural heartland. The disasters of this decade tangibly threatened to erode the very foundations of rural society.[1]

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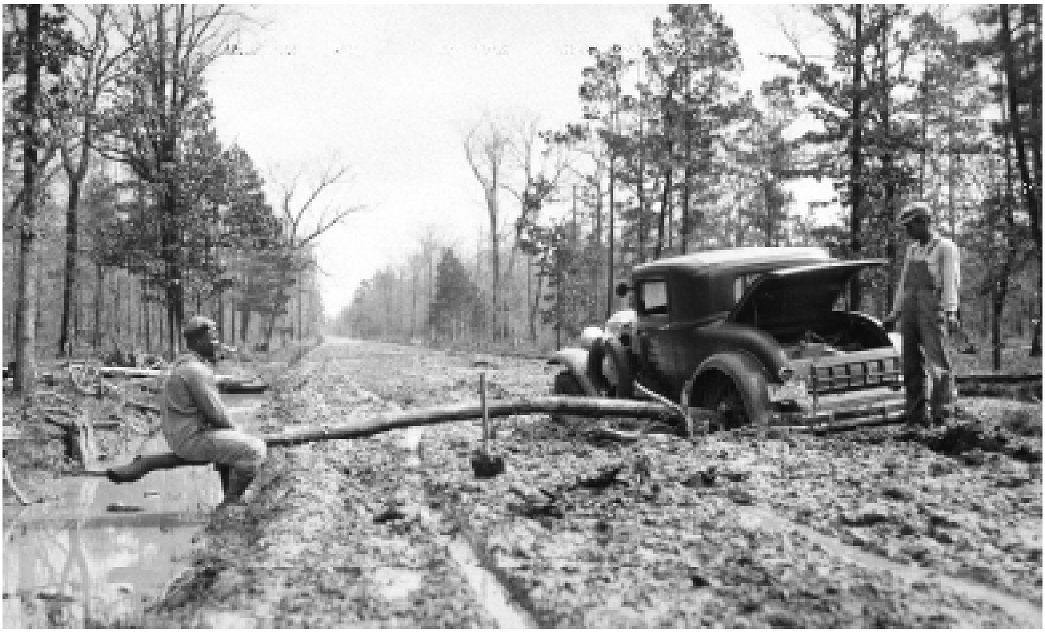
[1] According to U.S. Census figures, rapid population decline for most of rural Texas began after 1940, but even relatively small population dislocations could easily be interpreted as contradictions of progress. See Lionel Patenaude, "The New Deal: Its Effect on the Social Fabric of Texas Society, 1933–1938," *The Social Science Journal* 14, no. 3 (1977): 51–60; George Brown Tindall, *The Emergence of the New South, 1913–1945* (Baton Rouge: Louisiana State University Press, 1967), 354–55.



1. Proposed extension of a state highway in Red River County, Texas, ca. 1936 (photo: courtesy of the Texas Department of Transportation)

Almost from the moment of the Great Crash of October 1929, the federal government gave highway engineers access to an elaborate work-relief apparatus and unprecedented funding so they could provide "therapy" to a wounded nation. Contrary to common wisdom, from the beginning of the Depression, governments at all levels acted aggressively to increase public-works spending to stop economic decline and provide employment. For example, the Emergency Act of 20 December 1930 officially designated all federal-aid road construction as emergency spending and temporarily waived the requirement that all states match federal highway funds dollar for dollar. Texas representative John Nance Garner (soon to be Franklin D. Roosevelt's vice presidential candidate) led through the U.S. Congress the Emergency Relief and Construction Act of 1932 that gave more money to public works ($322 million) than to the controversial Reconstruction Finance Corporation ($300 million). The New Deal merely reinforced this commitment to public works.[2]

The engineers of the Texas Highway Department (THD) and thousands of local men and women activists in Texas seized this funding opportunity to respond to the environmental, economic, and social problems that troubled their state during the Depression. The engineers, in particular, enthusiastically took on the role of landscape architects and implemented specific forms of highway construction and roadside development with the conviction that modern technologies, particularly those associated with the automobile, could be expertly adapted to serve the needs of rural inhabitants. In doing so, these highway engineers applied perspectives of the human relationship to the environment from outside the traditional confines of their profession that not only predated the Depression but also seemingly contradicted the technological triumphalism that had brought their profession to prominence. Their environmentalism stemmed from two distinct social groups—amateur activists who carried forward the American beautification movement and professional landscape architects who promoted the concept of a democratic middle landscape.[3] Texas highway builders carried plans into practice that were designed to root modern, high-speed roadways in an agrarian vernacular landscape and to encourage both rural stability and progress. Their designs accomplished this seeming contradiction by pointing back to the wholesome relationship between Texas pioneers and nature and forward toward widespread employment and renewed prosperity while rejecting radical change.

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[2] Harold L. Ickes, *Back to Work: The Story of PWA* (New York: Macmillan, 1935), 81–82; G. G. Edwards, memorandum to all resident and division engineers, 12 February 1931, Texas Highway Department (THD), administrative circulars, Texas Department of Transportation, General Services Division, Records Management, Austin, Texas (hereafter cited as THDAC); William J. Barber, *From New Era to New Deal: Herbert Hoover, the Economists, and American Economic Policy, 1921–1933* (Cambridge: Cambridge University Press, 1985), 80–82, 147–55, 178–79, 184.

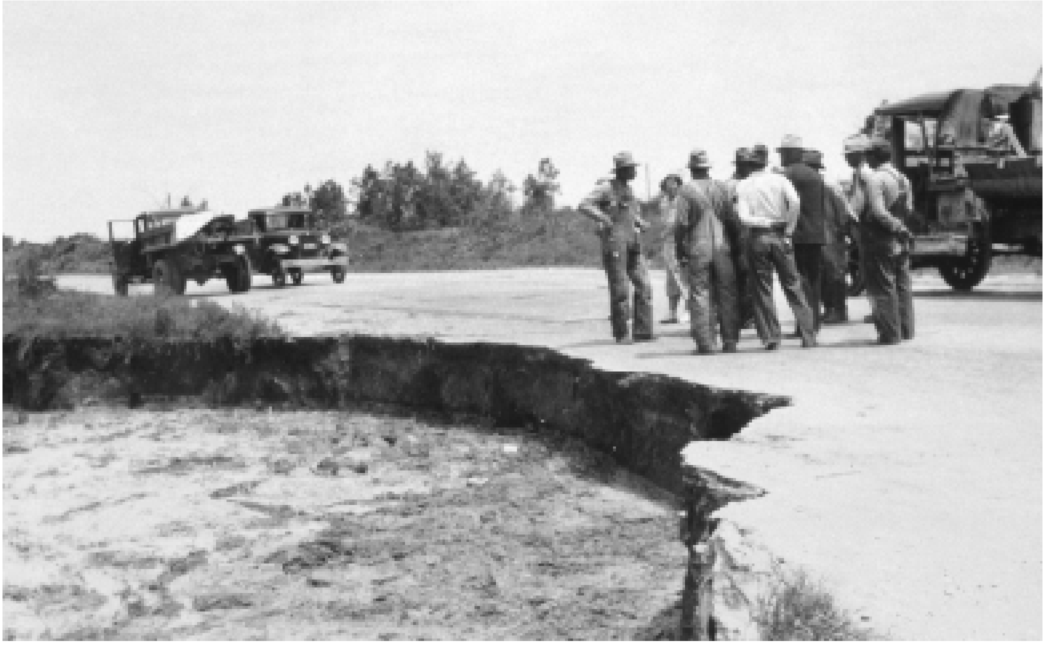
Highway engineers as landscape architects had high-minded intentions for roadway construction in Texas, but this was only part of the story. They were able to implement their program because they garnered a broad range of support, including the funds, land, labor, and political mandate to accomplish their goals and establish their status as professionals. In the process, they had an immense impact on the landscape and political arena in Texas—an impact with important implications for professional landscape architects today who share similar environmental concerns.

The Golden Age of the Engineer

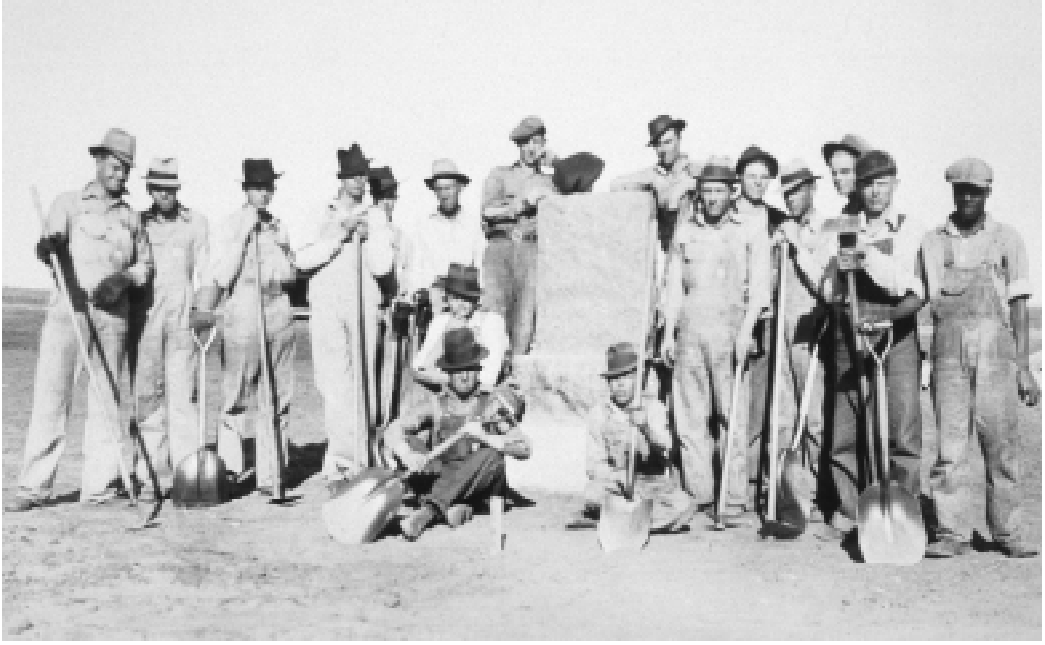
Highway promoters in Texas almost immediately recognized increased federal works spending as their chance to bring the state road system up to a national standard. As one of the poorest states, Texas had not undertaken highway development with much vigor, despite the activity of its Good Roads movement from before the turn of the century. Even though it had the largest state highway system in the country by the late 1920s, Texas still had vast rural areas with nothing but unimproved earth roads. Highway propagandists published a flurry of photographs during this time that showed the poor state of these roads (Fig. 1). "Get the farmer out of the mud" was a mantra of rural politics, since almost nothing garnered more local votes than a new road. By building roads, civic leaders, government officials, and civil engineers maintained, Texas could also more easily escape from the economic morass of the Depression.[4]

[3] Leo Marx, *The Machine in the Garden: Technology and the Pastoral Ideal in America* (New York: Oxford University Press, 1964); Peter G. Rowe, *Making a Middle Landscape* (Cambridge, Mass.: MIT Press, 1991); Vera Norwood, *Made from This Earth: American Women and Nature* (Chapel Hill: University of North Carolina Press, 1993); Steven Fox, *The American Conservation Movement: John Muir and His Legacy* (Madison: University of Wisconsin Press, 1981).

[4] John David Huddleston, "Good Roads for Texas: A History of the Texas Highway Department, 1917–1947" (Ph.D. diss., Texas A & M University, 1981), 25–27; Gibb Gilchrist, *Texas Highway Department, 1927–1937* (n.p., 1937), 7–8, 38.



2. "What to Do?" Locals inspecting flood damage to a paved road in Dallas County, Texas, ca. 1936 (photo: courtesy of the Texas Department of Transportation)



3. National Youth Administration work crew at Chisholm Trail Roadside Park, Wilbarger County, Texas, ca. 1937 (photo: courtesy of the Texas Department of Transportation)

Roadway construction fulfilled several other goals for its promoters. If properly done, roadway construction would prevent soil erosion, "the great highway destroyer," and save millions of precious dollars on maintenance and reconstruction (Fig. 2).[5] Because of the droughts, dust storms, and floods of the "dirty thirties," concern over soil erosion and the social erosion it caused became a national obsession during the decade. In fact, fear of erosion helped to establish the influence of professional ecologists and Soil Conservation Corps agronomists devoted to the idea of stable climax plant communities consisting of indigenous flora.[6]

Road construction would also prevent emigration or unrest among the unemployed by providing useful work "of the best possible kind . . . out of doors in the fresh air and sunshine." Such work would create good citizens attuned to nature, the past, and the benefits of hard work (Fig. 3). Above all, good roads promised to end rural isolation and bring faster mail delivery, quality consolidated schools, better medical care, and urban tourists with disposable income to the countryside.[7] In a 1937 interview with *Farm and Ranch Magazine,* the president of Texas Power and Light, John W. Carpenter, related his own experience to promote this ideology of work-relief road construction and technological progress:

> I left the farm for the same reason that thousands of other young men, also young women, left to go to the city. I was not obtaining on the farm those things I desired. Farm income was low and advantages were few. The farmer group of our citizens, the foundation of our Nation, was a neglected group. It always had been neglected, not only by business men, but by the Government itself. . . . I am an advocate of farm-to-market roads. I think we are spending too great a portion of our highway money on trunk lines and too little on the roads that lead past the farmer's house. . . . The farmer is entitled to every help and convenience it is possible to give him. He should be provided with the advantages of electric current and other comforts and conveniences as cheaply as possible. . . . Many other improvements will follow, all of which will have the tendency to make rural life attractive to the young people of the farm family. We cannot continue to drain the country of its virile youth and exist as a Nation. In order to keep young people on the farm we must not only bend every effort to increase farm income, but we must make rural life as attractive as possible by eliminating drudgery and by granting farmers the

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[5] Jac L. Gubbels, *American Highways and Roadsides* (Boston: Houghton Mifflin, 1938), 9.

[6] Donald Worster, *Dust Bowl: The Southern Plains in the 1930s* (New York: Oxford University Press, 1979); idem, *Nature's Economy: A History of Ecological Ideas,* 2d ed. (Cambridge: Cambridge University Press, 1994), chaps. 11, 12; Ronald C. Tobey, *Saving the Prairies: The Life Cycle of the Founding School of American Plant Ecology, 1895–1955* (Berkeley: University of California Press, 1981).

[7] Ickes, *Back to Work,* 8, 82. See "Looking Ahead," *Stephenville Empire-Tribune* (Texas), 15 January 1932, p. 6; Works Progress Administration (WPA), *Final Report on the WPA Program, 1935–43* (Washington, D.C., 1943), 49; William W. Bremer, "Along the 'American Way': The New Deal's Work Relief Programs for the Unemployed," *Journal of American History* 62, no. 4 (1973): 636–52; Bruce E. Seely, *Building the American Highway System: Engineers as Policy Makers* (Philadelphia: Temple University Press, 1987), 1, 3, 35.

> consideration they are entitled to. . . . If the strength of the Nation lies in its farm homes, then *let us strengthen the ties that bind* farm raised boys and girls to the farm home. Let us remove those conditions which induced me, as well as thousands of others, to desert the soil which we loved in order that we might secure some of the things we had dreamed of and desired.[8]

In essence, improved roads would, according to this argument, remedy any number of rural ills.

Although subsequent histories of work relief have tended to ignore it, road construction during the Depression represented the largest public-works program ever undertaken by the federal government, and roadwork was especially important in Texas. The sheer amount of road construction accomplished in Texas under the ideological rubric of progress during this period is quite impressive. Compared to the rest of the country, Texans fared incredibly well as recipients of federal relief. Work on roads, streets, and highways was the single most significant aspect of Works Progress Administration (WPA) activity between 1935 and 1943.[9] In Texas, the WPA built 31,836 miles of new and improved roadway, 7,686 new and improved bridges and viaducts, 34,431 new and improved culverts, and spent $159.6 million on roadway construction (39.8 percent of total WPA spending in Texas). In nearly every county in the state, roadway construction projects employed a large proportion of those without work, tangibly affected the local economy, and noticeably changed the rural landscape.[10] On most of these projects, road workers erected markers to record their contribution to American progress; these remain today on many road sections as recognizable relics of an era that lionized the construction of new roads.[11]

Texas roadway engineers used this work-relief bonanza to gain increased professional control over the construction and placement of road projects. During the 1930s, they increasingly designed highways for speed, safety, and "all-weather" use to accommodate the rising traffic load of faster automobiles. As one of its most important projects, the THD spent almost $20 million between 1930 and 1944 to build overpasses and underpasses to eliminate dangerous railroad crossings throughout the state.[12] The vast majority of road construction in Texas

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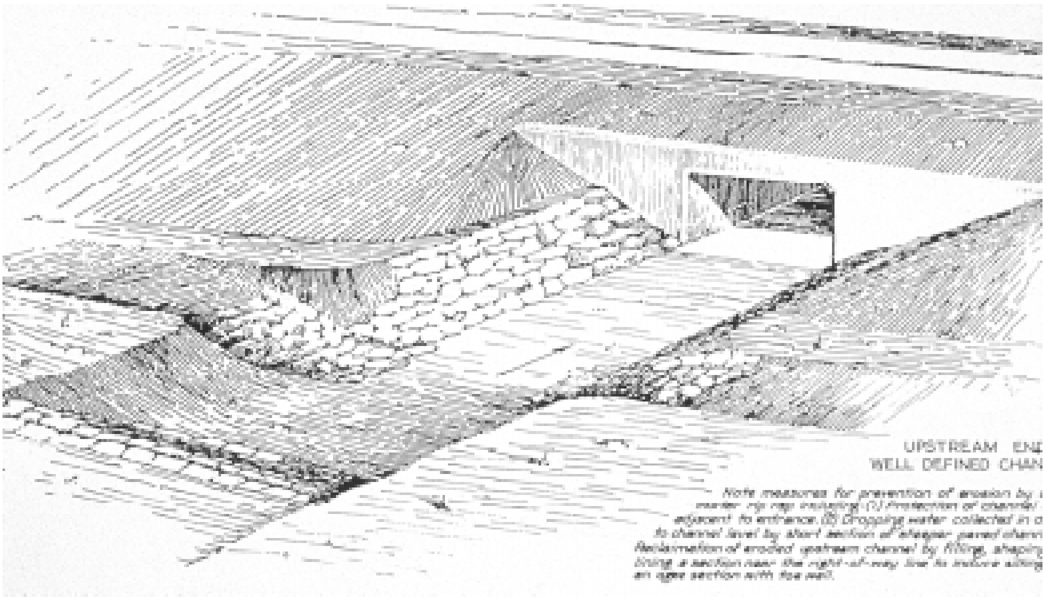
[8] John W. Carpenter, "Lateral Roads Country's Need," *Stephenville Empire-Tribune,* 20 August 1937, p. 5, emphasis added. This interview was published widely in local newspapers throughout Texas.

[9] WPA, *Report on the Works Program* (Washington, D.C., 1936), 85–101; Seely, *Building the American Highway System,* 87–91.

[10] WPA, *Final Report on the WPA Program,* 124, 126–27, 131, 135; Gregory T. Cushman, "Depression-Era, Work-Relief Road Projects in Bastrop County, Texas," report to the Texas Historical Commission, August 1996; Gregory T. Cushman, "State Highway 36 and Depression-Era, Work-Relief Road Construction in Hamilton County, Texas," report to the Texas Historical Commission, August 1997; see also the database of extant Depression-era road structures in Texas compiled by the Texas Department of Transportation, Environmental Affairs Division.

[11] For marker specifications, see THD, *Standard Specifications for Road and Bridge Construction,* M-1-39 (n.p., 1938).

[12] THD, *Specifications for Design of Structures* (n.p., 1935); Gilchrist, *Texas Highway Department,* 75, 113–26; THD, *Twelfth Biennial Report* (n.p., 1940), 26–33.



4. Construction plan for mortar riprap erosion-control structures on the upstream end of a well-defined channel, late 1930s (drawing: courtesy of the Texas Department of Transportation)

during this period, from the simplest graveling projects to the most complicated bridges and causeways, followed a detailed plan with standard specifications, many of which explicitly showed ways to prevent highway erosion (Fig. 4).[13] Highway engineers capitalized on the perception that their scientific plans removed road spending from the scandal-ridden world of patronage politics and boosterism.[14] With this view in mind, the federal-aid program inaugurated the first national road and traffic survey in March 1936. By the end of the decade, the THD had completed the first state traffic map and comprehensive set of county road maps to guide its future construction plans.[15] In 1932, the state voluntarily assumed the bonded debt of its counties for roadway construction and no longer required them to contribute to state projects.[16] Since many towns and small communities had also lost the ability to afford road maintenance, in 1937 the THD followed a federal mandate and took over road construction and maintenance in all rural towns with populations under 2,500 and municipal roads where houses were more than two hundred feet apart.[17]

[13] THD, Road Design Department, *Book of Standard Specifications and Special or Modified Mimeographed Specifications in General Use* (n.p., 1936). For a good example of a WPA project on the county road system that followed THD standards, see WPA work project, Runnels County, Tex., National Archives, project folders, no. 15828, microfilm.

[14] Seely, *Building the American Highway System,* 3–5, 23, 72; Gubbels, *American Highways and Roadsides,* 28.

[15] WPA, *Report on the Works Program,* 49–50; Seely, *Building the American Highway System,* 91–92; Ellis L. Armstrong, ed., *History of Public Works in the United States, 1776–1976* (Chicago: American Public Works Association, 1976), 83–84; THD, *Eleventh Biennial Report* (n.p., 1938), xxv–xxvi.

[16] Gilchrist, *Texas Highway Department,* 13, 176.

[17] T. H. Webb, "National Recovery Municipal Projects," circular letter to all division engineers, 28 September 1937, THDAC.

During the Depression, the THD moved to centralize administration and construction of rural roads under its own professional engineers with the support of local citizens and federal officials. This centralization movement culminated in 1938 when the THD obtained direct control over WPA road construction. Until the WPA was disbanded in 1943 and road construction came to a halt during World War II, the THD received and approved individual road construction proposals from all WPA districts and then made statewide proposals to central WPA administrators for blanket approval.[18] Echoing the leaders of the American technocracy movement, state highway engineer Gibb Gilchrist declared, "Any other policy must result in chaos." [19]

Landscape Architecture on Texas Highways

Despite their deification of the American road, highway builders in Texas were aware that their handiwork could devastate the pastoral quality of the rural Texas landscape, detract tourists from visiting, and erode their rural political support. Such concerns made them receptive to the ideas that were then being advanced by promoters of highway beautification. In response to their advocacy, Texas highway engineers accepted a mission that went far beyond providing work relief or building functional roads: they learned how to adapt Depression-era road construction to the values and techniques of professionalized landscape architecture.

This action had a number of beginnings. According to the most often repeated official history, state highway engineer Gibb Gilchrist overcame his bias against the "European" practice of planting trees along roadways thanks to the lobbying of Judge Walter R. Ely from Abilene in 1929. Ely served on the three-member State Highway Commission from 1926 to 1934, led the professionalization of the THD, and, according to Gilchrist, "worked on me for twelve months until he sold me on the idea of preserving trees. I was like the bashful lover; when I did fall, I fell hard."[20] Under Gilchrist's leadership, the THD inaugurated a systematic policy to save existing trees and scatter wild flower seed within the state highway right-of-way, and it established the Bureau of Roadside Development in 1931 to

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[18] Julian Montgomery, "W.P.A. Projects," circular letter no. 63–48 to all division engineers, 27 September 1938, THDAC; Julian Montgomery, "W.P.A. Projects," circular letter no. 58-38 to all division engineers, 4 October 1938, THDAC; Julian Montgomery, "Maintenance Betterment Program, Joint W.P.A. Projects," maintenance order no. 43–38 to all division engineers, 9 November 1938, THDAC; D. C. Greer, "State W.P.A. Projects and Special Maintenance Projects," administrative order no. 59-40, 23 August 1940, THDAC; Julian Montgomery, "Road Design: Inauguration and Procedure in Development of W.P.A. Projects," circular letter no. 10-38, to all district engineers, 29 November 1938, THDAC; D. C. Greer, "SHD-WPA Instructions No. 2, Preparation of WPA Project Proposal Forms," 17 September 1940, THDAC.

[19] Gilchrist, *Texas Highway Department,* 14; cf. Howard Scott, *Science versus Chaos!* (New York: Technocracy, 1933).

[20] "Address of Mr. Gib [*sic*] Gilchrist: 'Beautifying the Highways for the Texas Centennial' to the 36th Annual Convention of the Texas Federation of Women's Clubs, Austin," *Texas Federation News,* December 1933, pp. 9–11; "Ely Helped Lay Foundation for State's Highway System," *Abilene Reporter-News,* 8 April 1956, sect. I, p. 19.

5. Large, white-washed live oaks preserved along a rural highway, Live Oak County, Texas, ca. 1936 (photo: courtesy of the Texas Department of Transportation)

organize these activities (Fig. 5).[21] Only two other states had similarly established a statewide highway landscape program—Michigan in 1928,[22] followed by Oregon in 1929. By the end of the 1930s, several state highway departments employed landscape architects.[23]

Long before Texas established a government office to expertly manage its highway landscape, however, roadway landscape development had become the private crusade of various enterprising Texans. In the early 1920s, the Aransas County roadway engineer, a "Mr. Percival," and a local civic organization planted tamarisk and oleander along the Rockport-Aransas highway.[24] Other advocates saw the recreation potential of roadside landscaping. On his own initiative, state highway maintenance worker R. E. Wingate of Woodville built a swimming hole with two bathhouses on three acres of THD property in Newton County. This " first roadside park" opened in July 1930 with two thousand people attend-

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[21] "Address of Mr. Gib Gilchrist," 9–11; *Roadside Rest Program for California* (195[?]), Texas Department of Transportation, Environmental Affairs Division (hereafter cited as TxDOT-ENV) (photocopy), 39.

[22] At least from the late 1910s, the Wayne County Board of Road Commissioners (Detroit area) was systematically planting vegetation along roadways to hide ugly structures and to prevent erosion, with the belief that "attractiveness is an essential contribution to its efficiency…[and] a business asset." ("Roadside Beautification," *Engineering News-Record,* 27 June 1929, p. 1016).

[23] Edward N. Hines, "Serving the Traveler by More Attractive Roads," *Engineering News-Record,* 3 January 1929, pp. 32–34; Jesse M. Bennett, *Roadsides: The Front Yard of the Nation* (Boston: Stratford, 1936), 32; *Roadside Rest Program,* app. 3; Jac L. Gubbels, "Texas Landscapes for Safety: The Psychologic Approach to Highway Planting," *Landscape Architecture* 59, no. 2 (1940): 63–65.

[24] "Value of Scenic Features on Highways," *Texas Highway Bulletin,* March 1922; A. R. Hirst, "Tourist Traffic as a Factor in Highway Development," *Texas Highway Bulletin,* March 1923, 1.

6. Exhibit of native wild flowers, shrubs, and cacti suitable for planting in the arid Panhandle region on display at a women's club flower show in Childress, 1940 (photo: courtesy of the Texas Department of Transportation)

ing the ceremony. Wingate later built parks at Jaspar (1932) and Woodville (1934) and unsuccessfully tried to convince the THD to purchase and preserve sixty-five acres of virgin longleaf-pine forest in East Texas.[25]

No individual, however, could match the impact of the state's women's clubs in generating interest in the highway landscape. Gilchrist freely admitted to a meeting of the Texas Federation of Women's Clubs that "women have always been behind this movement." [26] In the 1920s, local women's and garden clubs advocated the preservation of roadside trees and wildflowers, successfully promoted legislation to ban billboards on the state highway right-of-way, and pushed for the development of a four-mile scenic drive on the San Jacinto Battlefield. In 1933, the president of the Texas Federation of Women's

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[25] "Ralph Ramos," newspaper clipping, Newton History Center, TxDOT-ENV (photocopy). A historical marker in the Texas Hill Country, however, declares that the "first Roadside Park in Texas" was established in fall 1933 when section foreman William Pape Sr. built a creekside picnic area. This marker was erected in 1968, twelve miles west of La Grange on state highway 71 in Fayette County (newspaper clipping, "First Texas Roadside Park," TxDOT-ENV [photocopy]). Gilchrist claimed Pape was also the first to scatter wildflower seed along a highway roadside.

[26] "Address of Mr. Gib Gilchrist," 9–11.

Clubs spoke on highway beautification at the U.S. Good Roads Association meeting, and Gilchrist appointed Jeanette Sorrell of San Antonio to chair the Citizens' Organization for Roadside Beautification and Improvement, a body that would coordinate the efforts of local women's clubs and encourage private citizens to beautify property outside the state highway right-of-way. Their shared goal was to remake Texas as "one vast park" for the upcoming Centennial of Texas Independence in 1936.[27] As one participant later recalled,

> Texas Garden Clubs cooperated with the Highway Department by collecting wild flower seed for highways so that when the Centennial was celebrated the red of standing cypress, the white of field daisies, and the blue of bluebonnets would call to mind the courage, purity and idealism of Texas heroes. Scenic drives in almost every city were sponsored—living monuments to heroes who blazed out trails in Texas.[28]

During subsequent years, local garden clubs, which were much more devoted than the THD to the use of native flowering plants in landscape designs (Fig. 6), organized wildflower shows throughout the state.[29] These women ultimately believed that many "country-life problems" could be solved if rural communities enjoyed attractive scenery, especially since these landscape changes were to be "a commercial asset as well as a pageant of beauty." [30]

But as they did with other aspects of rural highway construction during the 1930s, Texas highway engineers moved to take expert control of the highway landscape itself. Even though these women had "converted calloused, technical minded highway engineers" to the "movement to dress up the state's highways," explained one male roadway advocate, " there was so much ground to cover" on the nation's largest highway system that it could only be "a man's job" to implement these beautification plans. Only then might the Texas highway system "reach the standard of beauty and comfort expected by the traveler of today."[31] Beginning in April 1933, this "man's job" went to Jacobus " Jac" L. Gubbels, the newly hired chief landscape architect of the new THD Landscape Division (Fig. 7). It was also Gubbels's job to "sell the men" from outlying districts of the THD "on the idea of mass production of beautification."[32] Over the next fourteen years, Gubbels pioneered "the youngest of professions, landscape engineering as applied to public highways."[33]

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[27] Ibid.; John Porter Byrum, "The Highway Beautiful," *Texas Parade,* April 1937, 6–7, 28, 30; Texas Federation of Garden Clubs, *Yearbook* (n.p.: Texas Federation of Garden Clubs, 1931), 8.

[28] Mrs. John W. Greene, ed., *1928–1948: History of Texas Garden Club, Inc.* (n.p.: Texas Garden Clubs, 1948), 7, 15, 25.

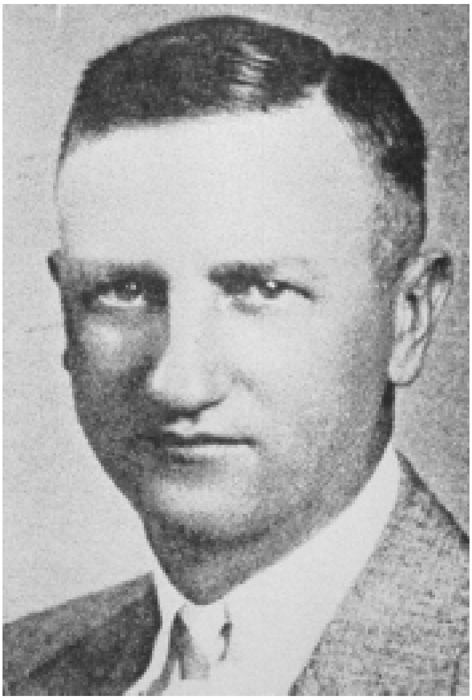
[29] Mrs. W. S. Higgins, "What Price Beauty?" *Texas Parade,* October 1937, 4, 5, 18; Mrs. Frank F. Friend, "The Highway Beautiful: West Texas Women Working Hard to Beautify Routes," *Texas Parade,* July 1938, 6, 23–24; THD, Landscape Division, *Discussions on Roadside Development* (n.p., 1940), 19, 28–30, 38–39, 59.

[30] Friend, "The Highway Beautiful," 6, 23–24.

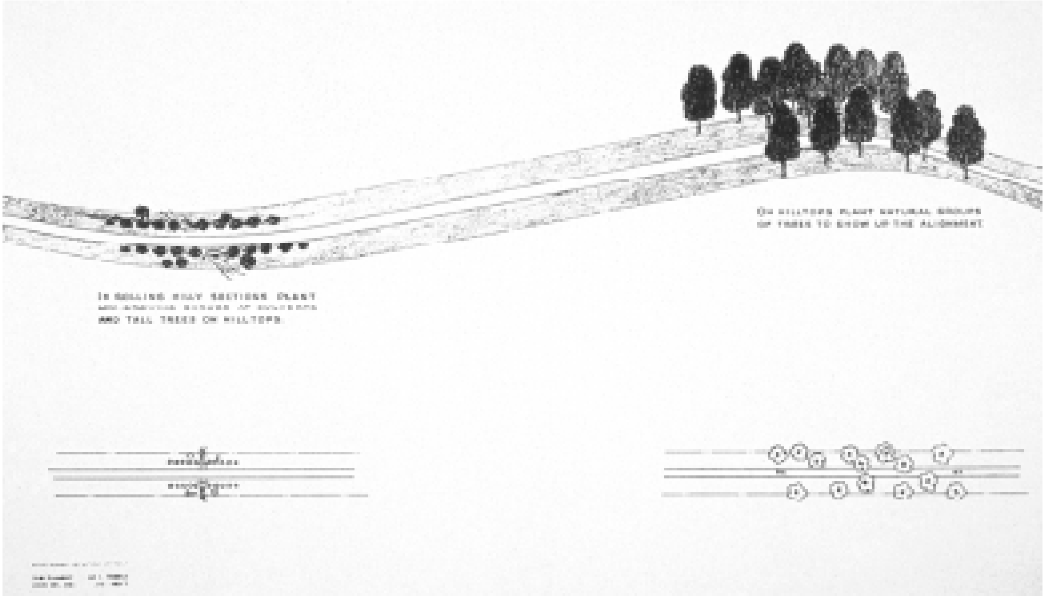
[31] Byrum, "The Highway Beautiful," 6–7, 28, 30.

[32] "Address of Mr. Gib Gilchrist," 9–11.

[33] Gilchrist, memorandum to all division and district engineers, 4 April 1933, THDAC; "On Texas Highways," *Texas Parade,* January 1939, 25.



7. Jac Gubbels, 1930s (photo: courtesy of the Texas Department of Transportation)


ON HILLTOPS PLANT NATURAL GROUPS
OF TREES TO SHOW UP THE ALIGNMENT
IN ROLLING HILLY SECTIONS PLANT
AND TALL TREES ON HILLTOPS.

8. Landscape plan by Jac Gubbels using planted vegetation to emphasize roadway alignment (from Texas Highway Department, Landscape Division, Suggestions for Roadside Development *1–2 [1935], 10)*

Gubbels (1897–1976) was born in Gröningen, The Netherlands. At age twelve, he wrote an essay on the city park system, and he soon became the protégé of the local director of public works, who sent Gubbels on to study landscape architecture in Germany. In 1916, Gubbels journeyed to Sumatra, where he worked as a plantation locater. Although he tried to return to Europe to complete his professional studies in 1922, financial and family concerns forced him to travel to the United States for work. During the mid-1920s, Gubbels obtained jobs with a New Jersey landscape firm, a Michigan group that built an alpine botanical garden, and a Denver planning firm before moving to Houston to open his own landscape design office in 1927. For his first jobs in Texas, Gubbels restored the San Jacinto Battlefield to its 1830s appearance, using old military plans, as well as the grounds around the Sam Houston home in Huntsville—both projects promoted by local women's clubs. The city of Austin then hired Gubbels to help it spend a $750,000 bond issue earmarked for parks and boulevards. Recommending that Austin use this money to buy open green space that would require little maintenance, Gubbels supervised the purchase of land along Shoal Creek, Plum Creek, and in Zilker Park—areas that remain important sections of Austin's celebrated greenbelt system. As a THD employee, Gubbels traveled in 1937 to Germany and Paris to inspect their advanced highway systems.[34]

In accord with many Depression-era ideals, Gubbels wanted "to build more attractive, safer and convenient highways for less money by taking advantage of natural forces and native materials."[35] In his view, a completed highway should be "in harmony with the surrounding landscape" and avoid artificial "angular, stiff . . . shar[p] lines and corners" and monotonous straight sections, since these defects posed a "mental hazard" to the driver and inscribed "a separate bleeding scar" across the landscape.[36] Beautified highways were supposed to make driving safer, since they allowed drivers to heighten their "road focus." Gubbels's landscape plans called for wider highways with gentler slopes and the removal or concealment of deep ditches and cuts, intrusive bridges and culverts, ugly borrow pits, and other distractions. He believed lines of trees and shrubs, rather than obtrusive signs, should subtly mark hilltops, curves, bridges, culverts, signposts, intersections, and uninteresting or monotonous road sections (Fig. 8).[37]

In Gubbels's scheme, these landscape forms contributed to the efficient function of the highway and the safety of the driver as they controlled "unconsciously the turn of the wheel and the foot-pressure on the accelerator." In a 1940 article for *Landscape Architecture,* Gubbels recounted riding with a friend and watching him respond to naturalistic markers along a stretch of "modern scientific highway."

> The speedometer was climbing again, this time to 65, as we descended a long slope and sped toward one of those hilltops over which the road seems to disappear

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[34] Gubbels resigned from the THD in 1947 after fourteen years of service to reestablish his private landscape practice and to formulate the twenty-year master plan for public school sites in Austin. "Texan In Action—A Profile: Design for Living Real with Gubbels," 30 November 1947, TxDOT-ENV (photocopy).

[35] THD, *Discussions on Roadside Development*, 43.

[36] T. H. Webb, memorandum from the Landscape Division to all division engineers, 15 January 1937, THDAC.

[37] Gubbels, *American Highways and Roadsides*, passim.

> completely . . . where death stalks the careless. There were no warning signs at the side of this road. But there was another warning in the trees arching over the roadway ahead, seeming to crowd in from both sides, though not really doing so. They made the road look narrow, made the driver feel that he was going to go through a tight place. I saw my companion's eyes come to rest on that narrow opening, and they never left it. The speedometer began to drop . . . down to 60, 55, 50, 45! By that time we had risen above the crest of the hill and could see the road. The bottle-neck was behind us. The speedometer began to climb. . . . "It works!" I shouted.[38]

Beautification also meant conservation to Gubbels. By preserving existing trees, shrubs, and wild flowers inside the state right-of-way, new road projects would beautify the Texas highway system for little cost. Drought-resistant vegetation, once planted, required little additional maintenance and held the soil together. According to the environmental thinking of the time, soil erosion was unnatural, so roadways that "worked with nature" and imitated natural contours would necessarily prevent this evil.[39] Gubbels's drainage designs tried to eliminate bare, steep slopes and slow water flow. His planting recommendations took local ecological conditions into consideration, although he was not opposed to the use of some non-native plants that are now considered noxious weeds. Nor was he averse to using a diverse array of materials. Highway workers could build diversion dikes from concrete, masonry, piled stone, earth, Bermuda grass, cacti, cane, tamarisk, or willow (Fig. 9).[40]

Like other Depression-era advocates of roadway construction, Gubbels had an expansive vision for his program that meshed with the attitude of many Americans toward "the machine in the garden." He strongly believed that democracy and social stability could not thrive in the city or in a countryside that was isolated; instead, he idealized a middle landscape where pastoral life is served by modern amenities. This vision and his understanding of his own role as an architect of landscape and society were rooted fundamentally in a deterministic view of technology. Accordingly, he believed, "When Russia gets roads and rural electrification she will become a democracy. . . . When the Russian people become independent, democracy will be inevitable."[41]

During the 1930s and early 1940s, the THD tried to implement this vision of a democratic and stable middle landscape. To show state legislators the tangible results of their landscape plans, the twenty-five regional districts of the THD compiled hundreds of photographs of actual landscape changes completed by 1937 (several of which illustrate this

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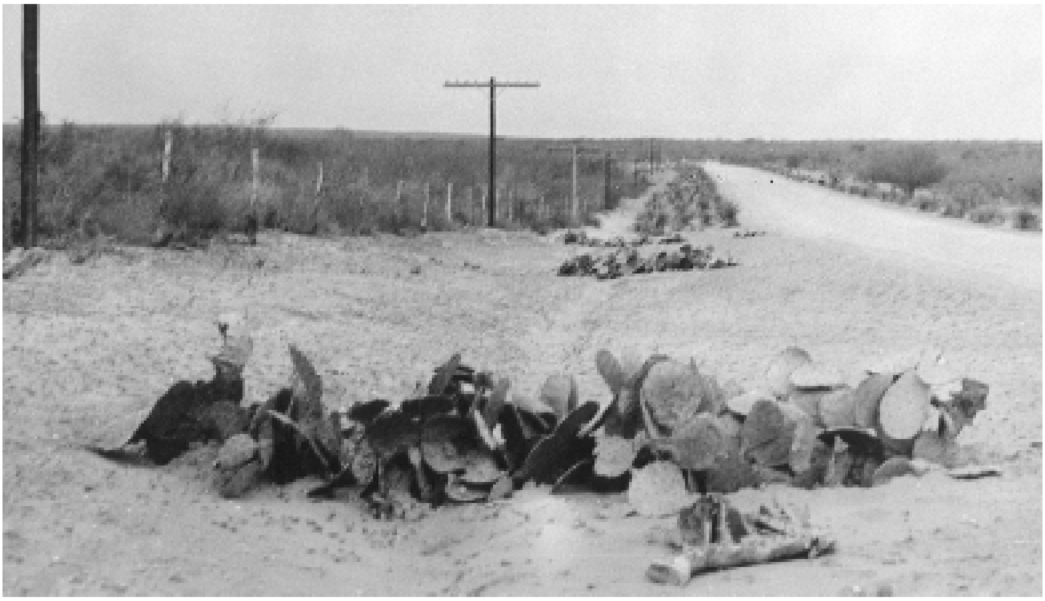
[38] Gubbels, "Texas Landscapes for Safety," 59–60.

[39] Paul Sears, *Deserts on the March* (Norman: University of Oklahoma Press, 1935); William Vogt, *Road to Survival* (New York: William Sloane, 1948).

[40] THD, Landscape Division, *Suggestions for Roadside Development* 1–2 (1935), 3 (1937); Gilchrist, "Highway Beautification Memorandum #1," memorandum to all division and district resident engineers, 25 May 1933, THDAC; "Discussions on Roadside Development," memorandum to all division and district resident engineers, 25 May 1933, THDAC; THD, *Discussions on Roadside Development*, passim.

[41] "Texan In Action—A Profile"; Marx, *The Machine in the Garden.*



9. Native prickly pear cactus planted to retard ditch runoff, south Texas, December 1936 (photo: courtesy of the Texas Department of Transportation)

article). By 1940, the THD had installed 9,600 planted miles of highway, 13,995 erosion-controlled miles, 15,260 miles with "good or moderate cross-section," and acquired 119 miles of additional right-of-way for tree preservation. Given such measurable accomplishments, Gilchrist and other state highway officials lauded their new landscape policy as "one of the principal achievements of the Department" during the Depression years.[42]

The THD engineers could not have accomplished these changes without support, however. At the federal level, road construction in national parks and on other public lands provided inspiration, and a 1934 mandate to spend federal funds on roadside improvements gave added impetus to these landscape programs.[43] Meanwhile, state and national work-relief regulations during the 1930s required short, thirty-hour work weeks and encouraged the use of "restrictive hand labor methods" to increase employment on road projects. Many citizens enthusiastically supported these projects because they served local interests all over the state and were ideally suited for temporary employment of unskilled laborers.[44]

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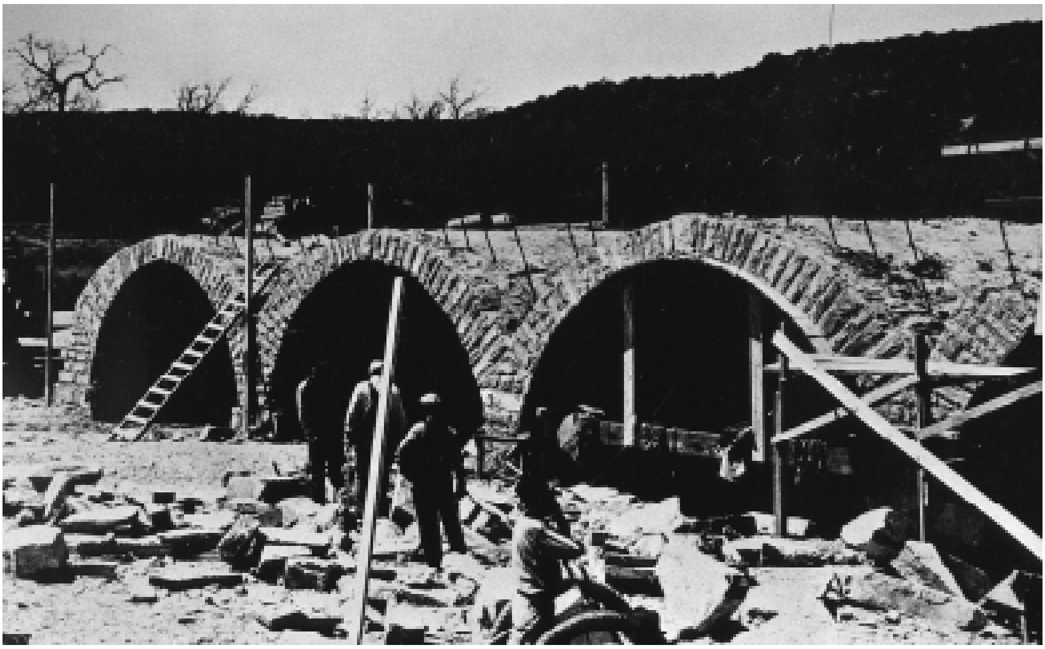
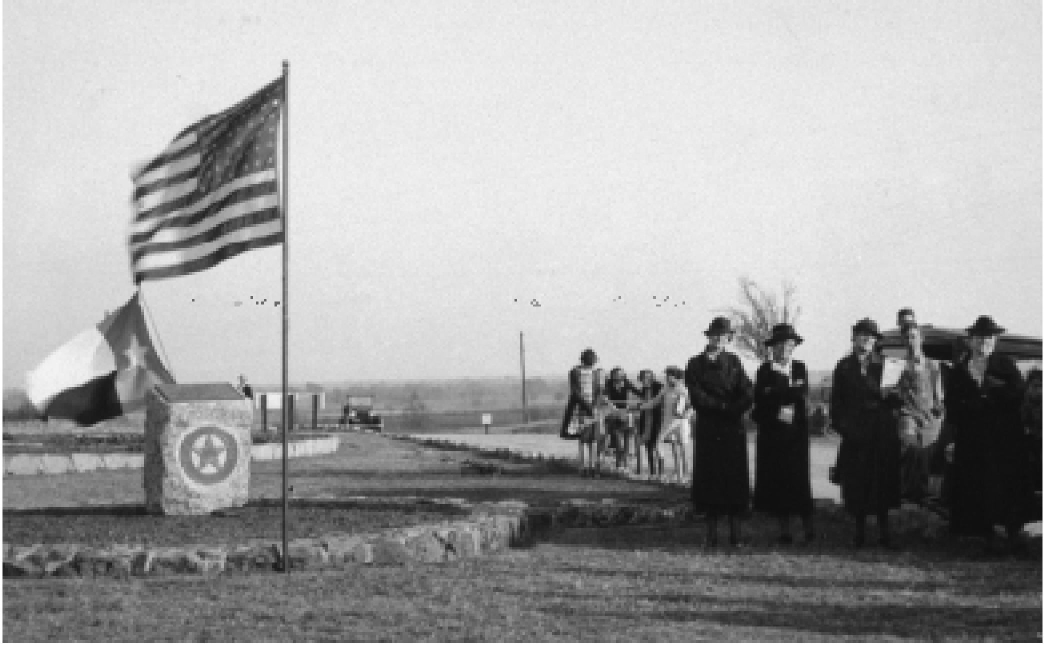
[42] Gilchrist, *Texas Highway Department,* 17–18; THD, *Twelfth Biennial Report,* 57. These photographs are archived in their original folders by the Texas Department of Transportation, Travel and Information Division, Austin, Tex. (hereafter cited as TxDOT-TID).

[43] Gilchrist, *Texas Highway Department,* 127, 177a. See Phoebe Cutler, *The Public Landscape of the New Deal* (New Haven: Yale University Press, 1985); Linda Flint McClelland, *Presenting Nature: The Historic Landscape Design of the National Park Service, 1916–1942* (n.p.: National Park Service, 1993); Linda Flint McClelland, *Building the National Parks: Historic Landscape Design and Construction* (Baltimore: Johns Hopkins University Press, 1997).

[44] Gilchrist, "Method of Handling Employment on Emergency Construction Highway Projects," memo-



10. WPA masons building the Brazos River Bridge, Palo Pinto County, Texas, 1940 (photo: courtesy of the Texas Department of Transportation)



11. Women's club members dedicating a roadside park with a marker commemorating the Centennial of Texas Independence, Delta County, Texas, ca. 1936 (photo: courtesy of the Texas Department of Transportation)

Such laborers were critical to the construction of the state's masonry highway structures, which exemplified the THD's high-minded intentions and the material reality of the Depression. Built from locally abundant stone, bridges, culverts, and other drainage structures cost relatively little but demanded maximum labor. The most important features of the "all-weather" road, these structures were designed to prevent soil and roadway scour.[45] In one noteworthy example, approximately 250 unskilled workers and 74 skilled workers employed by the WPA used over 7,200 cubic yards of limestone to build a spectacular 400-foot, eighteen-span bridge over the Brazos River just below the Possum Kingdom Dam and at least eleven other masonry structures. They also improved over twenty-seven miles of adjacent rural highway in Palo Pinto County west of Fort Worth (Fig. 10). Between October 1940 and September 1942, the WPA and the THD paid $181,065 for 497,071 man-hours of labor out of $311,089 for the entire project.[46]

While it is obvious that projects like the Brazos River Bridge vigorously attacked local unemployment and dramatically transformed the local landscape, in the minds of their builders these structures also helped root new roadway construction to the existing natural and vernacular landscape by incorporating rustic or naturalistic architectural forms.[47] New state specifications for stone masonry adopted during the 1930s thus required that "methods used shall . . . produce an attractive stratified-type of masonry," with all exposed faces "neatly broken with the hammer" and tool marks removed "to produce a natural appearance" that approximated the rocky outcroppings and masonry buildings common to many parts of Texas.[48] In the dramatic case of the Brazos River Bridge (which still

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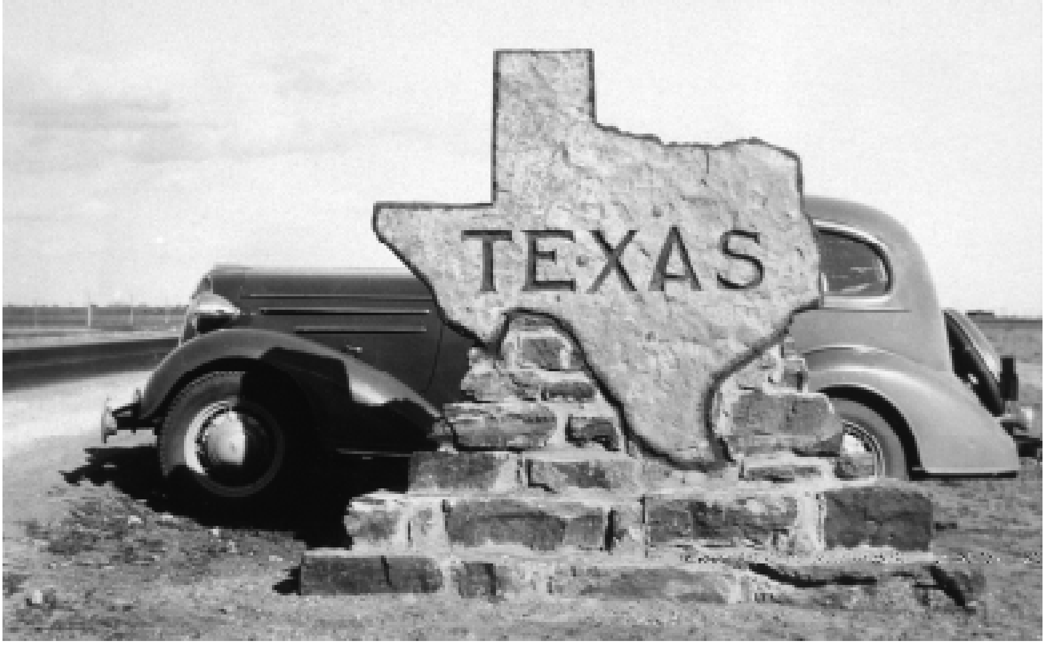
randum to all division engineers and district resident engineers, 27 September 1932, THDAC; Gilchrist, "Contractors' Payrolls on Emergency Construction Projects," memorandum to all division engineers and district resident engineers, 27 September 1932, THDAC; F. P. Sexton, "Emergency Construction 1933," memorandum to Gilchrist, 4 January 1933, THDAC; G. G. Edwards, "Emergency Federal Aid Projects," memorandum to all division engineers, district resident engineers, and resident engineers, 14 January 1933, THDAC; "N.R.W.R. Projects: Introduction and General Plan," September 1935, THDAC.

[45] In general, the THD estimated that masonry structures cost 21 percent more to build but required 300 percent more labor. D. C. Greer, road design circular no. 6-41 to all district engineers, 26 April 1941, State Highway Department WPA Papers, THDAC.

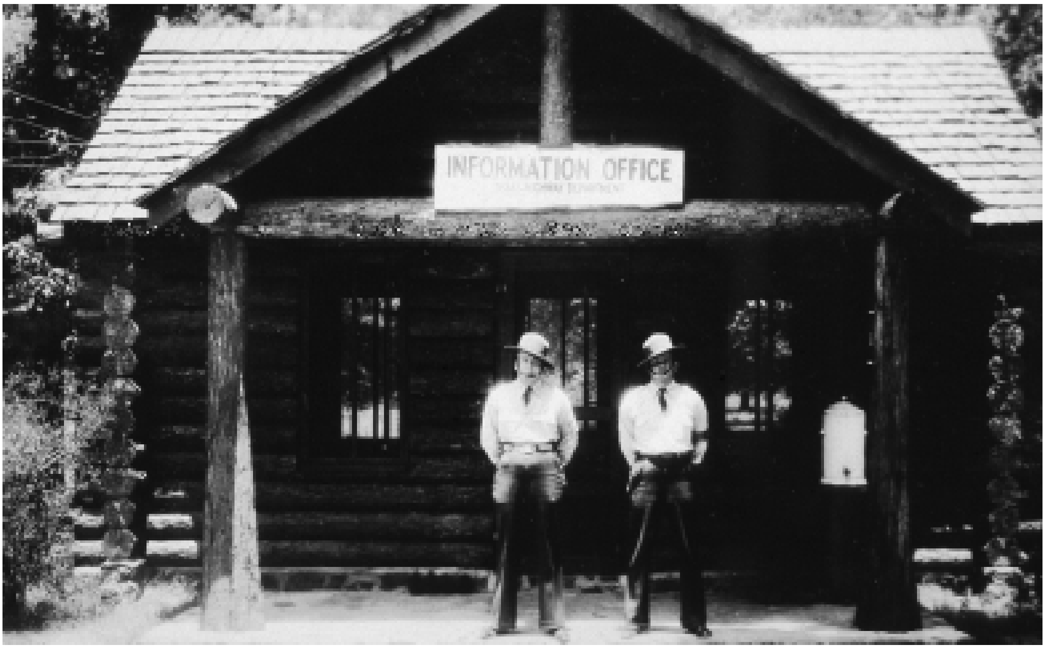
[46] WPA Texas project folders, no. 16344, National Archives, microfilm C-299.

[47] These words have often been used interchangeably, although *rustic* is often used to refer to a specific design aesthetic. "Rustic construction" can refer (1) simply to appearance, (2) to use of indigenous or pioneer construction techniques and materials, (3) to use of building materials and techniques according to conservationist principles, (4) to the integrated adaptation of building forms to the landscape problems of topography, vistas, available materials, local plant life, and local building traditions, or (5) to a particular informal school of architectural design called "government rustic." For discussion of these points, see Cutler, *The Public Landscape of the New Deal,* 77–78; McClelland, *Presenting Nature,* 11, 261–62; McClelland, *Building the National Parks,* 433–34; William C. Tweed, Laura E. Soulliere, and Henry G. Law, *National Park Service Rustic Architecture: 1916–1942* (n.p.: National Park Service, Western Regional Office Division of Cultural Resource Management, 1977), i, 106; James Wright Steely, with Joseph R. Monticone, *The Civilian Conservation Corps in Texas State Parks* (n.p.: Texas Parks and Wildlife Department, 1986), 8–17.

[48] THD, *Standard Specifications for Road and Bridge Construction,* 527–29; see also Gubbels, *American Highways and Roadsides,* 9, 44–45; *Discussions on Roadside Development,* 19, 28–30, 38–39, 45.



12. Texas–New Mexico state boundary marker, Dallam County, Texas, ca. 1936 (photo: courtesy of the Texas Department of Transportation)



13. Cadets on duty at the rustic Joaquin Information Office, Shelby County, Texas, ca. 1936 (photo: courtesy of the Texas Department of Transportation) stands today), THD designers juxtaposed an ancient engineering design with a modern concrete dam to create one of the state's greatest achievements in landscape construction.

Texas Oases—Roadside and State Parks

Rustic masonry forms, landscape improvements, and highway construction, in general, fit well with plans to promote the natural beauty and historical heritage of Texas and encourage automobile tourism during the Centennial of Texas Independence in 1936. To this end, the THD placed 264 granite markers throughout the state at planted turnouts meant to create "small beauty spots along the highway" (Fig. 11). All of the centennial markers incorporated the Texas Lone Star, a favored symbol in the design of buildings and gardens in Texas commemorating its former status as an independent republic.[49] On important highways crossing the state border, workers built twenty-three stone boundary markers (Fig. 12), and the THD installed thirteen tourist information centers that imitated the vernacular architecture of their locale (Fig. 13). Each of the THD districts eliminated "careless storage of equipment and junk" and contributed to the lavish landscaping of each division office, which sometimes included living exhibits (Fig. 14). In these ways, the highway department associated itself and roadway construction with three potentially contradictory notions: Texas nationalism, social stability, and progress in the past, present, and future.[50]

During the 1930s, Texas women's clubs and the THD also teamed up to build hundreds of roadside picnic areas and turnouts as way stations between tourist attractions and urban areas. Roadside parks provided a valuable service in the days before fast food, efficient radiators, and air conditioning. They supplied weary drivers with places along rural highways to briefly rest, prepare food, and eat at regular intervals (Fig. 15). In Gubbels's view, these "natural outdoor niches" also improved the "mental attitude of the motorist" and made the highways safer by providing "panoramic vistas, good trees, protection from sun and wind, proximity to streams, and other advantages."[51]

A local civic organization, such as the local garden club, typically made arrangements for the THD to take possession of a donated plot of land. When it could, the THD used work-relief crews from the National Youth Administration to clear, landscape, sod, and gravel these roadside parks. More skilled workers would then furnish the parks with rustic

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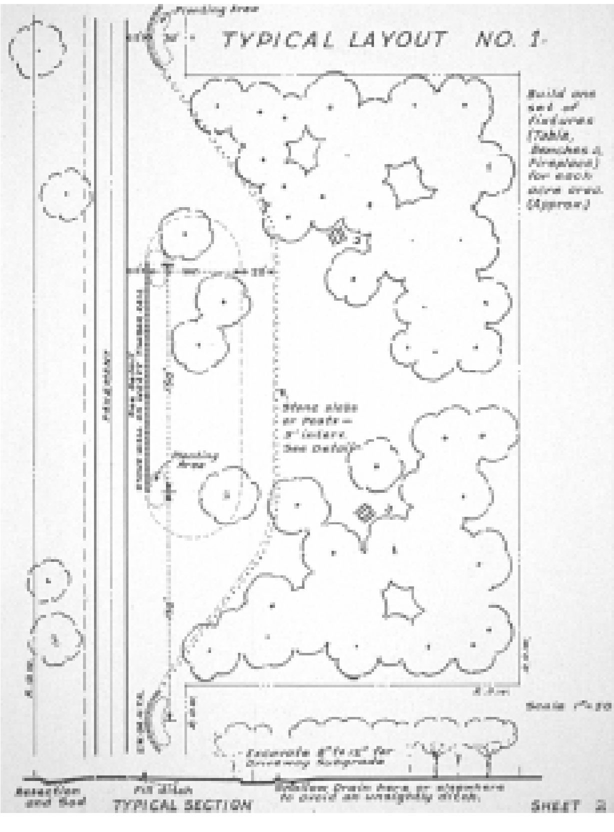
[49] The original centennial markers cost $150 each, and they commemorated the following: 220 county histories, 10 battlefields, 7 towns, 10 stage line or cattle trail crossings, 5 forts, 3 ferries, 2 churches, and a home, mission site, school, grave, bridge, mountain, and early exploration route. Gilchrist, *Texas Highway Department,* 18, 209, 214; *Monuments Erected by the State of Texas to Commemorate the Centenary of Texas Independence* (Austin: Commission of Control for Texas Centennial Celebrations, 1938).

[50] "First Thing Traveler Sees in Texas," 1938 newspaper clipping from scrapbook by Ben Lednicky, and "Early-Starting Days with the Highway Department, Paris District, 1937–1942," TxDOT-TID; Gilchrist, *Texas Highway Department,* 17–18, 129–31; Julian Montgomery, landscape circular letter no. 2–38 to all division engineers, 29 April 1938, THDAC; THD, *Eleventh Biennial Report* (n.p., 1938), xx–xxii, 23–24. See also, Kenneth Baxter Ragsdale, *The Year America Discovered Texas: Centennial '36* (College Station: Texas A & M University Press, 1987).

[51] THD, *Discussions on Roadside Development* 3, 22–29.

14. Members of the Alabama-Coushatta tribe admiring the lake on Division 11 grounds, Angelina County, Texas, ca. 1936 (photo: courtesy of the Texas Department of Transportation)


Parking Area
TYPICAL LAYOUT NO. 1
Build one set of fixtures (Table, Benches & Fireplace) for each acre area. (Approx.)
Pavement
Stone slabs or posts – 3' intervals See Detail
Parking Area
Scale 1"=50
Excavate 6" to 12" for Driveway Subgrade
Resection and Sod
Fill Ditch
TYPICAL SECTION
Shallow Drain here or elsewhere to avoid an unsightly ditch.
SHEET 2

15. Standard plan no. 1 for a roadside park (from THD, Suggestions for Roadside Development *1 [1935], 2)* structures according to Gubbels's designs—fences, rails, guard walls, steps, picnic tables, benches, fireplaces and rubbish burners. Some parks even contained elaborate pools, fountains designed to provide sanitary water, or shelters; others presented scenic vistas. As with his plans for highway landscaping, Gubbels specifically promoted masonry construction in roadside parks because it was inexpensive to build, long lasting, and "natural," although he allowed the use of concrete as long as it was disguised as wood or masonry (Fig. 16). Texas became a national model for construction of roadside rest areas: between 1929 and 1940, the THD installed 478 roadside parks larger than a half acre and 277 parks and turnouts smaller than a half acre.[52]

While impressive in scope and design, these roadside parks "of the utmost simplicity" hardly compared to the "monuments to pioneer southwestern courage" built by youth employed by the Civilian Conservation Corps (CCC) off Texas highways. Besides developing what became Big Bend National Park, the CCC built fifty-six parks in Texas between 1933 and 1942, thirty-one of which make up the core of the Texas state park system today.[53] Following federal policy, the CCC built "one well-built, low-speed, scenic through road" in most of these parks, including the seventeen-mile drive through the "Lost Pines of Texas" between Bastrop and Buescher State Parks.[54] CCC workers meticulously laid out these roadways to follow the contours of a picturesque landscape and crafted bridges and culverts to match the rustic styling of other park buildings (Fig. 17). Refectories, cabins, pools, and shelters built by the CCC in Texas parks to look like "the work of another age" still display some of the finest rustic masonry architecture in the United States. Several of these parks were established explicitly as roadside attractions, such as "the largest outdoor swimming pool in the world" at Balmorhea Springs State Park, which replaced San Solomon Spring in Reeves County (Fig. 18).[55]

Like Gubbels, CCC architect Arthur F. Fehr, the principal designer of Bastrop and Fort Davis State Parks, believed the roadway environment had a strong impact on drivers. In his view, tourists left "the machine age" behind as soon as they drove past "individually hand tooled stone" at the park gate (Fig. 19).[56] For Fehr, THD engineers, and many other

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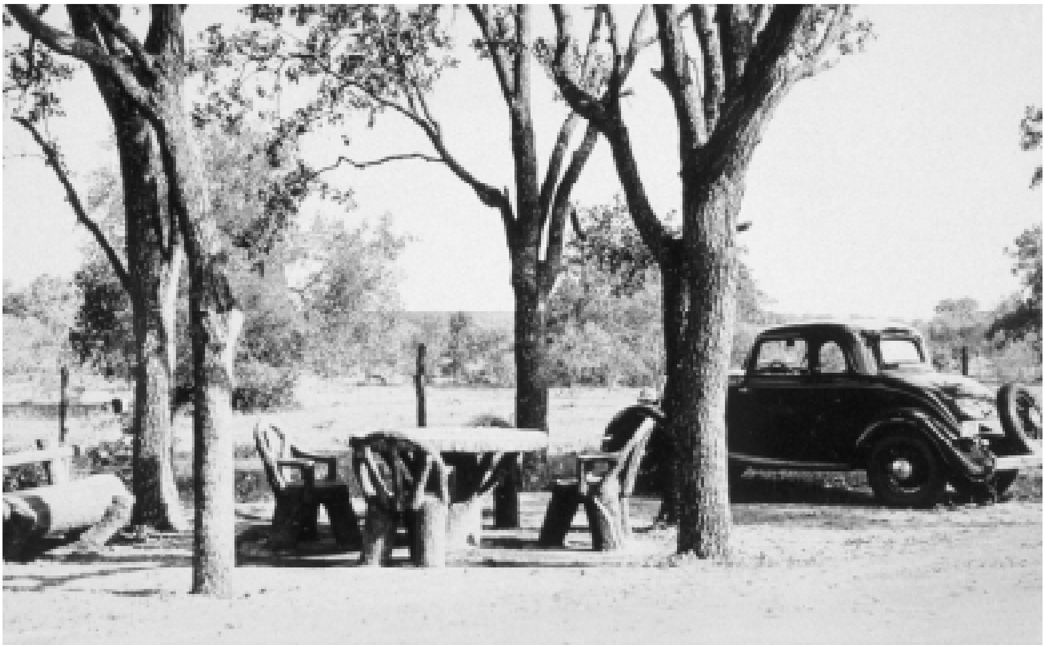
[52] Ibid., 31; THD, *Twelfth Biennial Report,* 57; Charles E. Simons, "Traveler's Oasis: The Story of Texas' Roadside Parks," *Texas Parade,* September 1936, 3–5, 24–25; J. Rex Ritter, "Worthy Public Works," *Texas Parade,* October 1937, 19; "On Roadside Parks: 'Golden State' Admits Superiority of Texas," *Dallas Morning Herald,* 20 August 1950, TxDOT-ENV (photocopy).

[53] See Steely and Monticone, *Civilian Conservation Corps,* 2–17; Cutler, *Public Landscape,* 67–69, 99, 101; Kenneth E. Henderson Jr., "The Civilian Conservation Corps in the Southwestern States," in *The Depression in the Southwest,* ed. Donald W. Whisenhunt (Port Washington, N.Y.: Kennikat Press, 1980), 3–25; John A. Salmond, *The Civilian Conservation Corps, 1933–1942: A New Deal Case Study* (Durham, N.C.: Duke University Press, 1967); James Wright Steely, *Parks for Texas: Enduring Landscapes of the New Deal* (Austin: University of Texas Press, 1999).

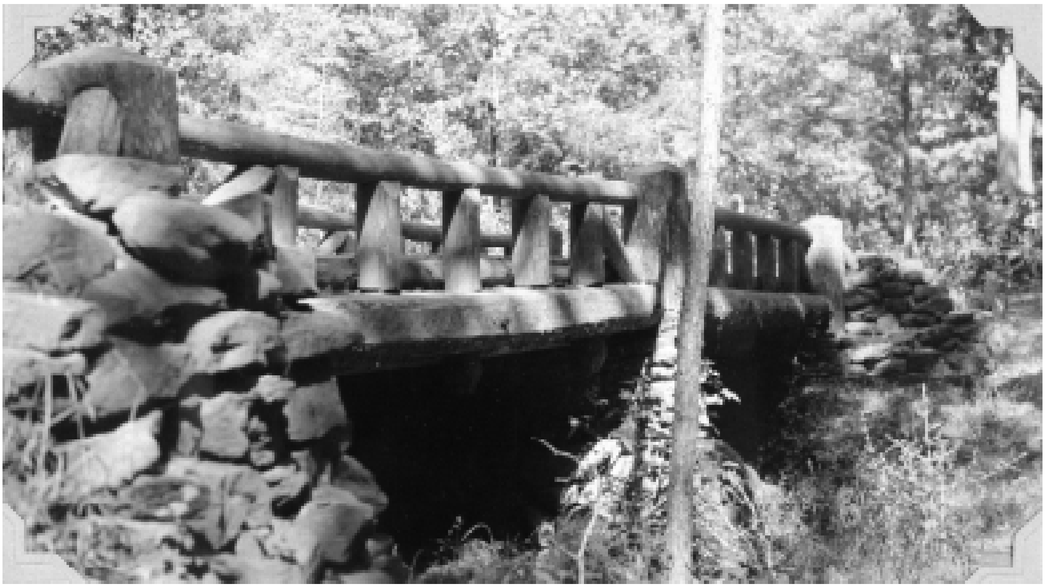
[54] See Cushman, "Depression-Era, Work-Relief Road Projects in Bastrop County, Texas."

[55] James J. Flink, *The Automobile Age* (Cambridge, Mass.: MIT Press, 1988), 171–82; Cutler, *Public Landscape,* 55–56; Steely and Monticone, *Civilian Conservation Corps,* 14–15.

[56] Like Gubbels, Fehr also worked before the Depression to restore some of the most important historic sites in Texas. He assisted with the restoration of the missions, Spanish governor's palace, and Juvenile Home for Boys in San Antonio. Arthur F. Fehr, "Bastrop's State Park," *Bastrop Advertiser* (Texas), 22 February 1934, p. 1; "Arthur Fehr Is Sent to Fort Davis," *Bastrop Advertiser,* 17 May 1934, p. 1.



16. Tables and benches constructed from concrete to imitate natural logs, an art of reproduction known at that time only to a few Mexican Americans around San Antonio, roadside park, Wilson County, Texas, October 1934 (photo: courtesy of the Texas Department of Transportation)



17. Rustic bridge hewn to span a stream in Caddo State Park, Harrison County, Texas, October 1936 (photo: courtesy of the Texas Department of Transportation) highway advocates, "communion with nature" by automobile was not only possible but conducive to serving a broader purpose. Well-designed roads established the vital link between parks and the population centers that provided the necessary philosophical, economic, and political support for land conservation, the construction of rural highways, and the preservation of rural society.[57] These Texas oases were intended to sustain present society as they provided for an abundant future, rooted in the natural world.

Blessed Be the Ties That Bind

During the Depression, Texans willingly decided to concentrate power in the hands of a few to spread prosperity among many. Locals practically relinquished total control over road construction to the THD, which emerged from the Depression in a much stronger position on the state political landscape (a status reflected in the completion of the monumental Greer State Highway Building across from the state capitol in 1936). In their battles against soil and social erosion, THD engineers consolidated their own position most of all.

Although Depression-era highway engineers as landscape architects surely prevented damaging roadway and soil scour, their highway projects unintentionally contributed to other kinds of erosion. High-speed highways often fragmented areas of natural vegetation and radically transformed the natural habitat of the narrow country lane, posing a great danger to wildlife (with the exception of carrion feeders).[58] Likewise, as Jack Kirby argues in *Rural Worlds Lost,* the advent of good roads in the rural South dramatically changed the patterns of rural life. For example, families began "living out of bags" from supermarkets instead of growing their own food for subsistence or purchasing goods at the country store.[59] Against the hopes of its promoters, rural road construction hardly kept the children of rural inhabitants bound to the land, and it may have even encouraged rural emigration over the long term. Following the professional engineering orthodoxy of the time, Gilchrist and other highway engineers mandated that the traffic load of automobile users determine when and where new and bigger highways needed to be built. Thus, it is hardly surprising that Gubbels had a plan ready for a landscape that is quite familiar to us today—"sections of Rural Highways with heavy traffic" of the type "known as the freeway."[60]

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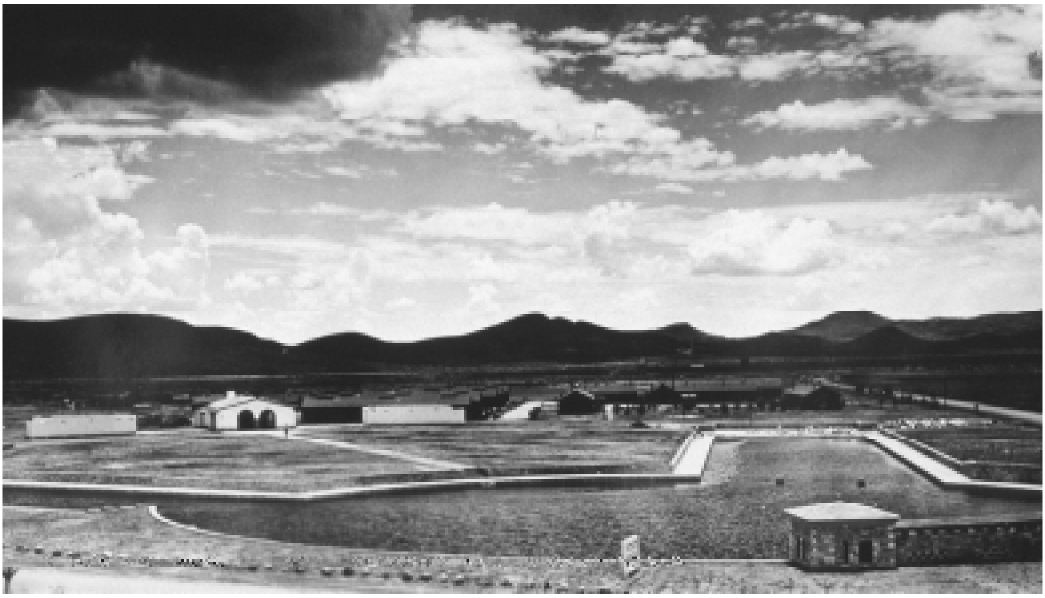
[57] Roscoe E. Wright, "Texas: A State of Beautiful Parks," *Texas Parade,* June 1936, 14–15, 22; Harry van Demark, "Uncle Sam's Newest Playground," *Texas Parade,* October 1936, 6–8; Lionel Beck, "'In Memory of—': Two Historic Texas Parks," *Texas Parade,* November 1936, 28; James T. Gray, "Garner State Park," *Texas Parade,* February 1937, 26.

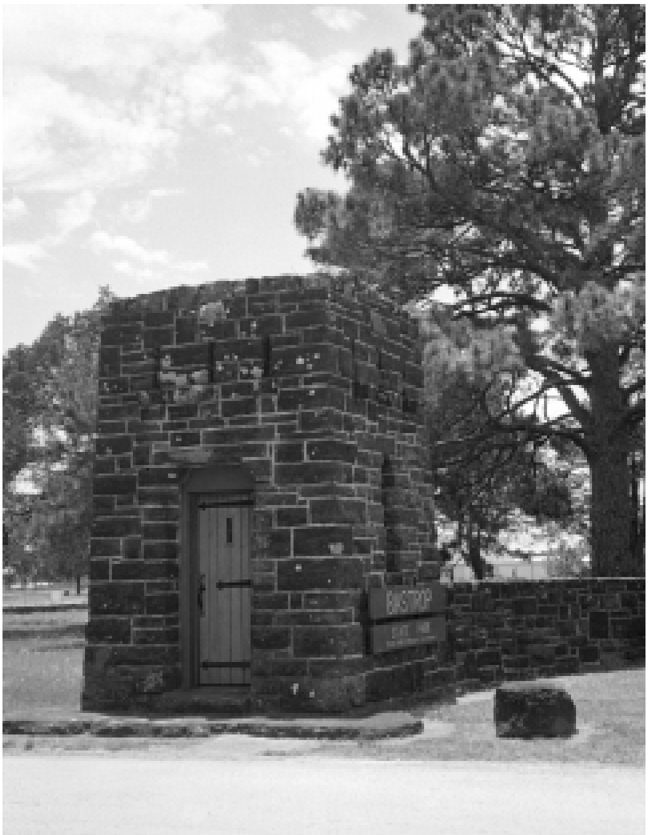
[58] According to current environmentalist orthodoxy, highway construction and the automobile have undoubtedly had many adverse ecological consequences. But Depression-era highway engineers were certainly attuned to cutting-edge conservationist thinking at the time, so it is difficult to say, from this historical precedent, how landscape projects in line with present science will fare in the future, particularly as our ecological judgments change, as noted by Robert Cook in this volume.

[59] On the impact of the automobile on rural Southern society, see Jack Temple Kirby, *Rural Worlds Lost: The American South, 1920–60* (Baton Rouge: Louisiana State University Press, 1987), 115–18, 130–31, 153–54, 163, 181–85, 193–95.

[60] "Address of Mr. Gib Gilchrist," 9–11; THD, Landscape Division, *Types of Motorways* (n.p., 1938), 9.



18. Balmorhea Springs State Park pool after development by the CCC, Reeves County, Texas, ca. 1937 (photo: courtesy of the Texas Department of Transportation)



19. Park entrance gate at Bastrop State Park, Bastrop County, Texas, 1996

Highway engineers prescribed and rendered valuable therapy for soil and social erosion in the Texas countryside during the Depression, but they provided no cure for the environmental or social changes that transformed rural Texas in subsequent years. Today, for better or for worse, we are bound by these ties to the past. Thanks to the continuing advocacy of highway engineers and activists such as Lady Bird Johnson, Texas today has one of the largest networks of paved, all-weather rural roads in the world, and spring wildflowers and state parks make scenic highways a major destination for tourists. But as rural transportation has changed, particularly with the implementation of the farm-to-market and interstate highway systems after World War II, many of the Depression-era roadside parks and highway landscapes were abandoned or replaced by even grander engineering projects. Today, the Texas Historical Commission and the Texas Department of Transportation are working toward identifying and preserving the intact remnants of Depression-era construction on the Texas highway system to preserve the memory of this generation of Texas trailblazers.

The Texas highway construction movement solidified the position of planners as key architects of modern American life. Engineers as landscape architects extended their control over the highway environment to the spaces that bordered it in accord with the needs of society and the environmental limits of a middle landscape that formed the shared horizon of both rural and urban Texans. The movement also helped to strengthen the position and influence the mission of later landscape professionals and contributed in a roundabout way to the birth of the professional environmental mitigator, empowered to protect the environment.[61]

The conceptualizations of Texas's landscape architects, while critical, only partially account for the transformation of the state's Depression-era roadway landscape. Its evolution was influenced by forces as intangible as the psychological effects of roadside vegetation on a driver's actions and as concrete as the impact of too much rain on a transportation system. While educated male professionals increasingly directed this process, they were fundamentally influenced by women garden enthusiasts and dependent on the skills and labor of thousands of unemployed workers as well as on funding from the federal government. These diverse elements were unified by a single mission—to prevent the erosion of the state's agrarian society by adapting technological progress to local environmental constraints, and the shared needs and desires of Texans. Together, these elements combined to form the present roadway system in Texas, to help institutionalize the landscape architecture profession, and to provide the state with some of its most valued green spaces. These achievements, however, were not without costs. With this in mind, analysts of the landscape architecture profession might wish to focus less attention on the intentions of environmental designers and pay closer heed to the historical forces that can constrain implementation of designs and influence long-term consequences. Knowledge of these "ties that bind" us should humble and inspire present-day landscape experts as they attempt to prevent erosion of the natural environment, preserve relics of the past, and shape human life today.

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[61] The famed Ian McHarg owes much of his success to the ideas and gains of this earlier generation of experts; see the essays by Anne Whiston Spirn and Elizabeth Meyer in this volume. See also Samuel Hays, "The Middle Ground: Management of Environmental Restraint," in *Beauty, Health, and Permanence: Environmental Politics in the United States, 1955–1985* (Cambridge: Cambridge University Press, 1987), 392–426. Some of the ideas promoted by recent environmentalists and landscape architects as "new," particularly the focus on social processes as a foundation for environmental action, were originally conceived and implemented by engineers of the Texas highway construction movement. Thus, this essay reinforces some of the analytical themes developed by Jeffrey Hyson in this volume regarding the divergent horizons and histories of American environmentalism. I also argue, somewhat differently from Brian Black in this volume, that the policies of cultural manipulation and environmental conservation ascribed to the New Deal were products of a progressive ideology already shared by many Americans that coexisted with a widespread fear of radical change. The social and environmental upsets of the 1930s provided a genuine impetus to New Deal programs, which provided an opportunity to implement core elements of this ideology.

Organic Planning: Ecology and Design in the Landscape of the Tennessee Valley Authority, 1933–45

Brian Black

In a 1944 discussion of conservation, the writer and naturalist Aldo Leopold stresses ideas such as preserving the "unity of resources." He writes that "land-use cannot be good if it conserves one component and injures another." He specifically criticizes "lop-sided conservation [which] is encouraged by the fact that most Bureaus and Departments are charged with the custody of a single resource, rather than with the custody of the land as a whole." "Conservation land-use," he concludes, "consists of a system of acts, motivated by a desire, and executed with skill."[1]

Leopold's ideas have become increasingly important to today's environmental policies. Yet as he described it, conservation was being carried out in the United States as early as the 1930s and 1940s. The New Deal offered the forum through which such ideas could be put into practice, and the Tennessee Valley Authority (TVA) may have offered the single most sustained experiment in the federal application of a conservation ethic.

More important, the practices and products of TVA acted as concrete symbols or archetypes to help the American public understand conservation as a concept. The public's education represented the clearest way to solidify support of TVA and conservation. The visual aesthetic of well-managed land, specifically landscape architecture, knitted TVA's system of conservation into a cohesive landscape that impressed Americans with its pleasing appearance.

David Lilienthal, the longtime TVA director and chairman, probably understood the symbolic value of TVA's accomplishments better than anyone. When asked how one could best observe the accomplishments of TVA, he waxed Leopoldian as he responded that the view must show the unity of the landscape. Therefore the composite could only be effec-

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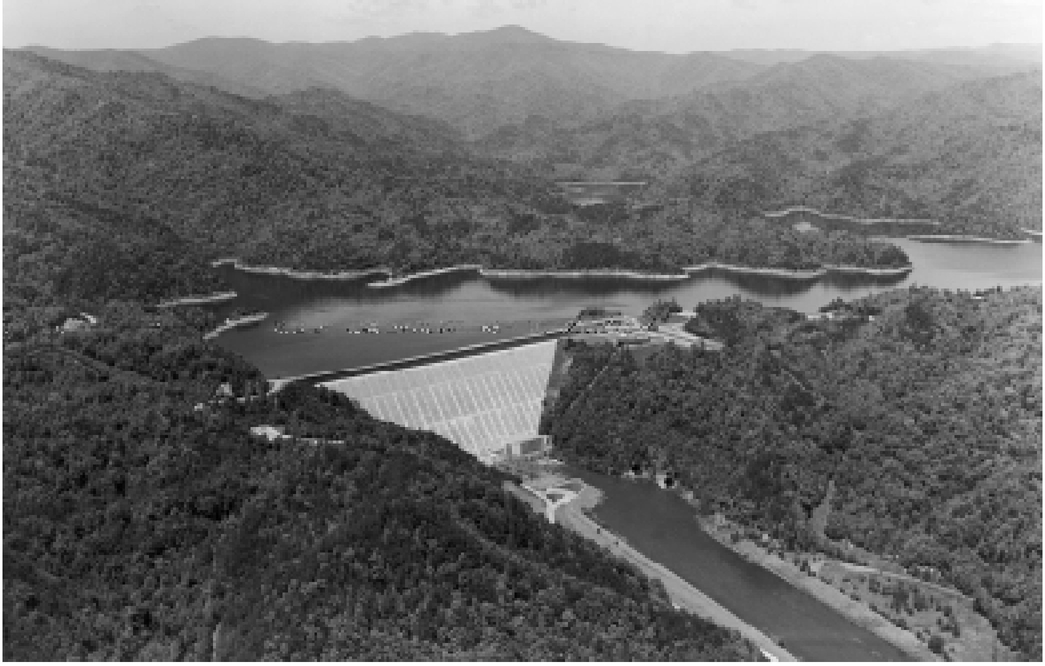
[1] Aldo Leopold, "Conservation: In Whole or in Part?" in *The River of the Mother of God* (Madison: University of Wisconsin Press, 1991), 314–17.



1. Fontana Dam, constructed in 1942 in North Carolina, well off the Tennessee's main stem, near Great Smokey Mountains National Park (photo: courtesy of TVA)

tively viewed from the air, like that seen from five thousand feet in Figure 1. Lilienthal wrote this description in 1944:

> There it is, stretching out before your eyes, a moving and exciting picture. You can see the undulation of neatly terraced hillsides, newly contrived to make the beating rains "walk, not run, to the nearest exit"; you can see the grey bulk of the dams, stout marks across the river now deep blue, no longer red and murky with its hoard of soil washed from the eroding land. You can see the barges with their double tows of goods to be unloaded at new river terminals. And marching toward every point on the horizon you can see the steel crisscross of electric transmission towers, a twentieth-century tower standing in a cove beside an eighteenth-century mountain cabin, a symbol and a summary of change.[2]

Here, Lilienthal describes a fully instrumentalized and rationalized landscape. Planning controlled waste while generating progressive aspects of American life. Conservation was, Lilienthal writes, "an active process of educated planning," through which "men and science and organizing skills applied to the resources of waters, land, forests, and minerals have yielded great benefits for the people. And it is just such fruits of technology and resources that people all over the world will, more and more, demand for themselves. That people believe these things can be theirs—this it is that constitutes the real revolution of our time."[3] This vision proved so invigorating to President Franklin Delano Roosevelt that he ordered his staff to excerpt Lilienthal's *Democracy on the March* in his own speeches.[4]

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[2] David Lilienthal, *TVA: Democracy on the March* (Chicago: Quadrangle Books, 1966), 8–9, 3.

The most difficult task faced by TVA landscape architects may have been the integration of high-end technology—icons that were normally intended to dominate a scene—into a naturally pleasing environment. Contemporary observers might regard the inclusion of such human manipulation as the antithesis of anything "environmental" or natural, yet such a perspective fails to consider the original principles that guided TVA planning.

The landscape of TVA exemplified planning and management based on a strong environmental ethic when the agency implemented its mission in the 1930s and 1940s. In fact, founded on engineering and knowledge of the natural sciences, TVA planning served as a vehicle for holistic conservation. It emphasized the management of an entire watershed rather than a single portion of the environment. TVA's multifaceted planning has, in the end, proved an enduring model of management for the modern environmental movement.[5]

When it was developed in the 1930s, TVA's bright new order of the landscape depended on functionality. At the center of the instrumentalized Tennessee Valley lay the hydroelectric dam, like a clamp upon the spirit of the unruly river.[6] But while most engineers were designing large gravity dams to stand as monuments throughout the nation, TVA planners were integrating multipurpose hydros into extensive plans for recreational areas, public buildings, new towns, forests, and other vehicles of resource management. Certainly, the hydroelectric dam presented designers with the most significant limitation to their aesthetic plans. Yet by knitting together the structures within the landscape designs, planners remained faithful to the original intention behind TVA's systematic restructuring of the regional watershed. In other words, no single dam was constructed to show TVA's authority over the mighty Tennessee; instead, the dams blended into the rest of the valley as a more complicated symbol of efficiency and technical management.

Previous scholars have argued that the landscape of the New Deal brought symbols of the modern age to the rural poor.[7] But what was the objective of this "public symbolism"?

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[3] Ibid., 3.

[4] Personal correspondence between Lilienthal and FDR and internal memos from FDR to secretaries; President's Secretary's Files, FDR Library and Archive, Hyde Park, N.Y.

[5] In this analysis I do not intend to equate "natural" with "environmental." An environmental perspective is a point of view that is aware of natural systems and seeks to conduct human life in a way that respects these systems. Such a perspective, however, assumes the involvement of human managers. See William Cronon, ed., *Uncommon Ground* (New York: Norton, 1996); Michael Pollan, *Second Nature: A Gardener's Education* (New York: Atlantic Monthly Press, 1991).

[6] It is common for environmentalists to view hydroelectric dams and associated planning as some of the most egregious examples of damage humans have imposed on the natural environment. There is certainly data to support this opinion. My analysis here argues neither for the efficacy of hydroelectric planning in every case nor the application of the conservation ethic to every example. I am merely interested in placing TVA planning, much maligned by environmentalists for long-term pollution, the snail-darter controversy, or any number of other crises, in its original context.

[7] Walter Creese, an architectural historian, discusses this fascinating symbolic value in *TVA's Public Planning: The Vision, the Reality* (Knoxville: University of Tennessee Press, 1990).

Why apply a modern art deco scheme to minutiae such as pump houses and water fountains? The complex answer to these questions centers on the New Deal's interest in defining a new role for the federal government. Primary to this role was assigning the federal government authority to utilize technology to define an orderly, efficient, and well-schooled method of using natural resources—a conservation ethic.[8] The best record of this original intention is the scene of TVA's planning, the landscape presented to the American public as a model for the future. While TVA's role eventually veered from the original ideas that fueled its founding; its true legacy set the historic precedent of federal involvement in environmental regulation and policy making.

Recasting the "Organic"

While conservation impulses certainly found bureaucratic support before 1900, very few exemplified Leopold's vision of multifaceted conservation. The economic emergency of the 1930s allowed the federal government to implement ideas and technology of modernist thought, which instrumentalized resources with an intrusiveness never before seen.[9] From today's vantage point, such radical shifts in the use and management of resources are difficult to see as possessing a positive environmental ethic: the completeness of the human domination over the natural can easily seem only damaging. Before condemning such practices, however, one must comprehend the rationale behind such intrusions within an historical context.

Lewis Mumford, the modernist writer and planner of this period, held the conviction that humans must apply their mind and technology to environmental problems; however, he maintained a trust in a utopian form of technology that did not subvert natural forms. In Mumford's mind, blind faith in technology had led to serious problems, and he sought a respectful marriage between human technology and the natural environment.[10] Humankind's responsibility was to understand natural science and technology to an extent that would allow it to fulfill its needs within certain parameters, thereby enabling a more "organic" technology.[11]

The idea of organic planning remains equally relevant today. Addressing the developments along Washington's tamed Columbia River, historian Richard White has written

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[8] Such a role for the federal government in environmental regulation was necessitated by the waste and misuse of resources during the nineteenth century and by the changing ethics of the modern era. The standard source for such a discussion is Samuel P. Hays, *Conservation and the Gospel of Efficiency* (Cambridge, Mass.: Harvard University Press, 1959). As Hays discusses, these federal initiatives were based on carefully managing the supplies of specific resources, such as water and wood.

[9] Modernist thought allowed people to view problems and issues without the baggage of history or other ethical considerations and controls. Solutions were sought by simply applying human rationale and technology with no conscious limitations. In such a way, planning and development were seemingly freed from environmental limitations. Upon closer inspection of TVA and other projects, however, natural laws and science maintained an important role in the human rationale being used to shape the landscape. See David Harvey, *The Condition of Postmodernity* (Cambridge: Blackwell Publishers, 1992).

[10] Lewis Mumford, *Technics and Civilization* (New York: Harcourt, Brace and World, 1963), 366.

[11] Of this marriage, Mumford writes, "Instead of being confined to a resentment that destroys life in the act of hurling defiance, we can now act directly upon the nature of the machine itself, and create another race of these creatures, more effectively adapted to the environment and to the uses of life." Ibid., 371.

2. Norris Dam, fronted by its power building and a walking trail. Begun in 1934, Norris is along the upper Tennessee, near Knoxville. (photo: courtesy of TVA)

that it is a "mistake to read back the fate of the Columbia as a plan to denature it."[12] He argues that hydroelectric dams are based on the imitation of natural practices and ideas and therefore retain an organic, rather than artificial, technological intention. Thus perceived, this form of manipulation is rooted in an understanding of natural systems—in other words, the conservation of natural resources.

With White and Mumford's ideas in mind, TVA's planning of the Tennessee River and its watershed can be viewed as a commitment to conservation. Twenty dams and strategies for managing forests, fields, and towns instrumentalized the natural environment of this flood-prone river valley to produce a more efficient and effective landscape than nature could create. A laboratory for ideas and principles of modernism, the Tennessee Valley became a transformed landscape, shifting from worn-out, eroded, and denuded land to an updated version of the pastoral ideal. More than simply replumbing a river, developments in the valley entirely re-created regional culture, generating a natural environment that not only appeared more aesthetically pleasing, but also functioned more efficiently. Through TVA's efforts, a region perceived as moribund and culturally backward was thrust forward as an example of the potential of applying new scientific ideas of planning to create a hybrid of modernism and conservation.

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[12] Richard White, *The Organic Machine* (New York: Hill and Wang, 1991), 57.

The designed landscape became the most enduring symbol of this progress. And yet, while the rustic landscape design of Frederick Law Olmsted and other landscape architects is readily accepted as the middle landscape created from a marriage of civilization and nature, the New Deal version rarely receives similar consideration.[13] Landscape architect Anne Spirn writes, "Calling some landscapes 'natural' and others 'artificial' or 'cultural' ignores the fact that landscapes are never wholly one or the other."[14] Such a point of view allows us to regard the original motivation behind TVA planning as a serious attempt, similar to that of Olmsted, to create a middle ground between nature and civilization. Landscape architects proved to be the major conveyors of this coupling as they shaped the scenery and functionality of the 41,000 square miles of the Tennessee Valley.[15]

While this overall design is most easily observed from an aerial view, it is symbolically revealed in a number of scenes, including many of the restored natural resources of the valley as well as the most unnatural—the presence of the hydroelectric dam (Fig. 2). In the case of TVA dams, the gravity design itself, with its modern simplicity and styling, demonstrated the agency's control of nature. Many critics of such river impoundment have called these poured-concrete dams landmarks to humankind's hubris at attempting to control nature, but such criticism falsely categorizes all dam designs and river management agendas together. Close inspection of the ideology behind TVA's efforts suggests that this was not a landscape of domination. Instead, the dam's relationship to the land was more cooperative, even organic, and symbolic of a conservation ethic that the New Deal would market to the American people.[16]

Planning Functional Nature

The TVA Act of 1933 called for the U.S. government to finance, plan, and carry out the revitalization of the depleted Tennessee Valley by constructing a series of dams along the

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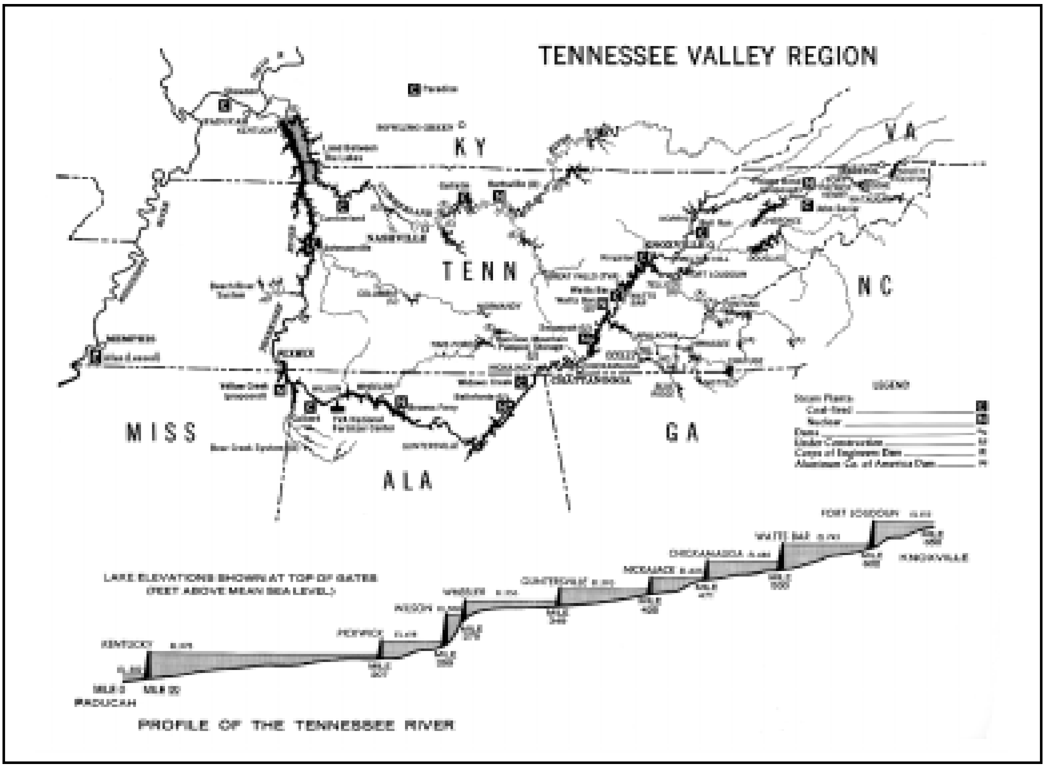
[13] In the paradigm argued by Leo Marx in *The Machine in the Garden* (New York: Oxford University Press, 1964), American culture has largely been constructed through an ongoing struggle between the pastoral and technology, or civilization. American generations have struggled to reconcile this situation by constructing a "middle ground" between the two. Such a subjective construct, of course, varies with cultural eras.

[14] Anne Whiston Spirn, "Constructing Nature: The Legacy of Frederick Law Olmsted," in Cronon, *Uncommon Ground,* 111.

[15] This aspect of TVA is well documented in Phoebe Cutler, *The Public Landscape of the New Deal* (New Haven: Yale University Press, 1985). Cutler's work focuses on the planned community of Norris, Tennessee, as a case study of TVA's inclination toward landscape architecture. This is certainly an evocative example; however, for the purposes of this essay I have chosen not to discuss Norris. In my opinion, this community reveals little about the conservation ethic within TVA management and more about community development. While the landscape design of Norris suggests that the TVA believed such constructed nature was a part of the utopian community, it does not necessarily tie directly into the ethics behind TVA's large-scale planning.

[16] The concept of the hydroelectric dam as a symbol of domination over nature is also discussed in Donald Worster, *Under Western Skies* (New York: Oxford University Press, 1992). See also Marc Reisner, *Cadillac Desert* (New York: Penguin, 1993).



3. TVA projects within the Tennessee Valley. To the left is the Mississippi River, which flooded repeatedly in the early 1900s. (map: courtesy of TVA)

Tennessee River to harness its potential for generating power as well as its tendency to cause flooding. The first TVA project, Norris Dam, cost $34 million to erect. During the 1930s, the federal government invested $300 million in TVA projects, creating eight dams alpre-settlement forestong the Tennessee (Fig. 3).[17] Taming the river led to many ancillary duties such as the relocation of people and trees, town planning, and recreational administration. Given these additional duties, TVA conceived of its purpose as encompassing far more than simply constructing dams. Once the river was controlled and soil runoff eased, TVA planners set out to make sure that the land would not be depleted again. This was to be accomplished through education.

From the TVA perspective, only trained individuals could be entrusted with this vulnerable ecological legacy. Such planning was based on the conservation ethic of efficiency and functionality, with a special emphasis given to limiting waste. In his inaugural address, FDR revealed the forces that would drive many of his New Deal policies when he said, "Nature still offers her bounty and human efforts have multiplied it. Plenty is at our doorstep, but a generous use of it languishes in the very sight of the supply."[18] The wealth was

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[17] Figures quoted are from the *New York Times Magazine,* 20 August 1939.

[18] Franklin Delano Roosevelt, "First Inaugural Address," Washington, D.C., 4 March 1933.

4. Dedication of Chickamauga Dam, near Chattanooga, Tennessee, 1940 (photo: courtesy of TVA)

available, he suggested, if the management of such resources was conducted with more care. FDR believed the government was fulfilling this role in the Tennessee Valley, and he often lent the project his symbolic support, including personally participating in events such as the dedication of Chickamauga Dam (Fig. 4).

Careful management, of course, had to be based in a scientific understanding of the natural world. During this period, ecologist Frederic Clements and others furthered a line of ecological thinking based on the idea of the climax community, which held that nature should be used as a guide and that the indigenous flora should be respected instead of altered.[19] Allowing natural systems a defining role was a revolutionary shift in conservation thought. Historian Donald Worster has noted that during this period, some "reconciliation between the ecological and human patterns of evolution had to be devised, some accommodation reached between faith in nature's ways and sympathy for human ambitions."[20] Largely through the New Deal policies during the 1930s, Worster observes, came "the birth in the public consciousness of a new conservation philosophy, one more responsive to principles of scientific ecology."[21] While scientific planning did not involve aesthetics, TVA's designs demanded visual appeal to symbolize a new ideal landscape and, in later years, to stimulate recreation. First, however, America had to learn the need for such an ethic.

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[19] Donald Worster, *Nature's Economy* (New York: Cambridge University Press, 1977), 233.

[20] Ibid., 219–20.

[21] Ibid., 232.

While the New Deal introduced the public to these new ideas of ecology and conservation, it still needed to stimulate public support. The way of doing so, strategists decided, was to give Americans the reasons behind the federal actions—to educate them in conservation, a process that began shortly after construction began along the Tennessee River. Whereas other policy initiatives called for publicizing certain causes or issues, conservation required that Americans be introduced to the natural sciences. In keeping with the manner through which FDR informed the public of each New Deal effort, conservation was publicized through print, film, and photography.[22] While TVA efforts were confined to the watershed of the Tennessee River, publicity of this "grand experiment" blanketed the nation.[23]

Interestingly, the concerns that fueled TVA policies were already present in the national media before the organization's establishment. In a 1929 *Saturday Evening Post* article, Garet Garrett warned readers that the ideas of conservation needed to be put to use as soon as possible. "Land, forest, water power, and rainfall," he writes, "exist or occur on the surface and life is no less dependent upon them now than it has been from the beginning." The United States, he believed, had become overly dependent on industry and "artificial necessities" and now refused to take time to preserve these natural necessities. "Yet," he writes, we must realize that artificial necessities "rest upon resources which we know to be limited or irreplaceable."[24]

Many Americans saw TVA as the answer to cries such as those expressed by Garrett. The first American symbol of conservation in practice, TVA took a romantic concept and put it to work—which is arguably the only way an economically depressed nation would support the conservation of natural resources. Americans would like to be "as careless of the future [resources] as our forefathers were," proclaimed one writer in a *Collier's* article in 1935, "but we can't do it. The reasons are apparent."[25] Most prevalent among these reasons

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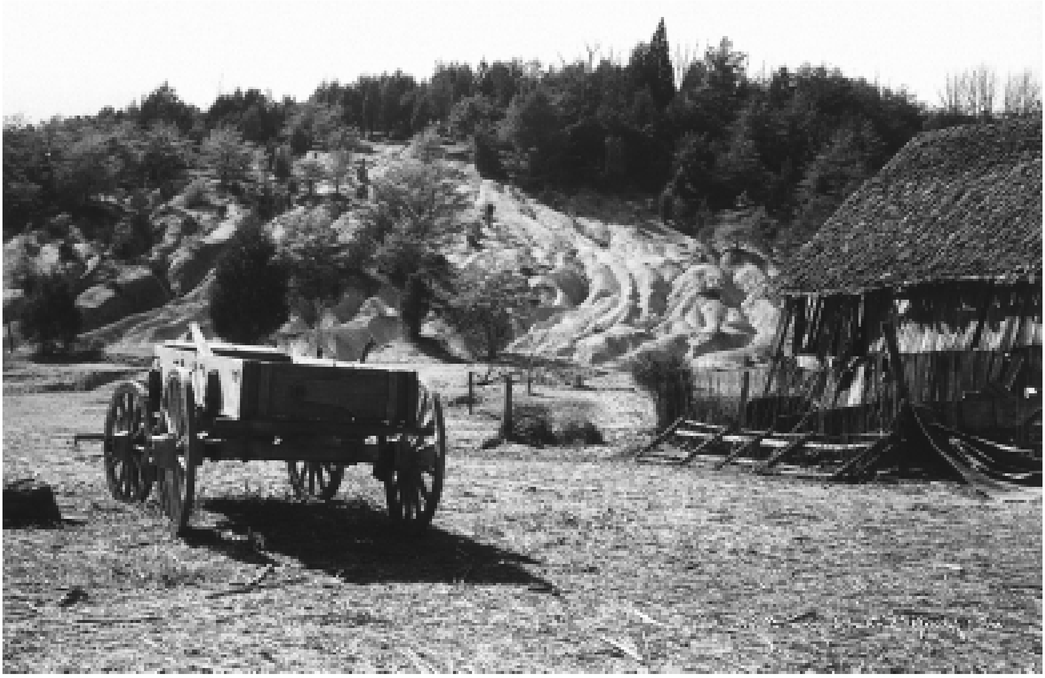
[22] Investigating the New Deal's interest in validating itself through the popular culture is not the specific purpose of this analysis. Consideration of this agenda, however, is based on a variety of dynamics coming together during the 1930s. Warren Susman writes, "The photograph, the radio, the moving picture—these were not new, but the sophisticated uses to which they were put created a special community of all Americans [in the 1930s] unthinkable previously." *Culture as History* (New York: Pantheon, 1984), 160. Additionally, William Stott writes simply, "[FDR] had a documentary imagination: he grasped a social reality best through the details of a particular case." *Documentary Expression and Thirties America* (Chicago: University of Chicago Press, 1986), 94. These cultural dynamics created an era of politics that openly used many forms of propaganda and popular culture to take policy explanations directly to the public, often bypassing traditional political avenues.

[23] "Grand experiment" was a standard reference to the TVA during the 1930s, suggesting a connection with the United States, also considered a "grand experiment." FDR often used such terminology when speaking of TVA efforts.

[24] Garet Garrett, "Faith in the Bonanza," *Saturday Evening Post,* 25 May 1929, 8–9.

[25] Owen P. White, "Land of the Pilgrim's Pride," *Collier's,* 27 July 1935, 12.



5. Erosion in Jefferson County, Tennessee, washed away topsoil and damaged the vegetation. (photo: courtesy of TVA)

were the scenes of the Tennessee Valley's intensely eroded soils and its equally barren-looking future as documented in photographs such as Figure 5.

Disseminating the Conservation Ideal

The marketing of New Deal policies was much more than lobbying or greasing the wheels of local political machines; the New Deal sought to introduce and implement entirely new responsibilities for the federal government in American life. In educating Americans on new principles for land use, the New Deal established the need for an authoritative voice. The federal government was the only entity that could administer such projects. While plans emphasized agricultural workers and others laboring directly on the land, the publicity aimed to change the very fabric of every American's idea of land use. Schoolchildren were one of the New Deal's most interesting choices of constituents to be won.

The emphasis on getting New Deal ideals into the classroom is evident in the coverage of the *Scholastic,* the era's most popular school magazine. One 1934 issue, for instance, was dedicated to the idea of regional planning. The issue's cover illustration of water spinning mighty power turbines left little doubt that TVA would be at the heart of the discussion. In the opening editorial, "Blue Prints for a New America," the editor explains that regional planning is more than mere beautification. "Such things are . . . like putting a coat of varnish on a chair with an uncomfortable back and ugly spindle legs."

This sort of act only makes "the best of a bad job." Regional planning, he continues, is an

> effort to find the best possible use for a given piece of the earth's surface, and then consciously to direct the future development of that land for the welfare and happiness of the people who are to live on it. . . . It has to do with everything that goes to make up our daily lives. . . . The expert regional planner . . . must be a sort of miraculous all-around person, a combination of engineer, inventor, architect, farmer, forester, accountant, economist, social worker, teacher, publicity man, and philosopher.[26]

The editorial ended with the all-embracing statement, "Let us learn to think in continents and watersheds."[27]

The stage had been set for the major focus of this issue of the *Scholastic.* It came in the form of a long story by A. E. Morgan, then chairman and the founding member of TVA's triad of directors.[28] Accompanied by many photos, the article discusses the nuts and bolts of the project and then concludes with a salute to the people of the region who "will for the moment overlook their minor losses in the process of readjustment, and will think of the widely distributed prosperity and well-being which will come."[29] The road to the New Deal's vision of national progress was paved by the conservation of natural resources, a statement that was underscored by the concluding article on the Civilian Conservation Corps, "Conserving Forests and Rebuilding Men."

The *Scholastic* returned to the subject in its second issue of 1936. This time, the issue focused specifically on conservation. *S. O. S.—Save Our Soil!* reads the headline of the opening editorial, presented in the form of a play about the meaning of conservation. "What does conservation mean?" the teacher asks in the play. The chorus responds with a definition straight out of TVA's primer: "You plant trees. . . . Don't shoot birds. . . . Keep waters clean. . . . When the soil washes away, it needs a cover crop . . . and Dams."[30] These were the ideas TVA had united beneath the heading of conservation. Whereas conservation's popular meaning had once only included a respect for nature, the new definition of conservation incorporated the idea of land use, or the respectful use of nature. To be used respectfully, this land had to first be carefully engineered.

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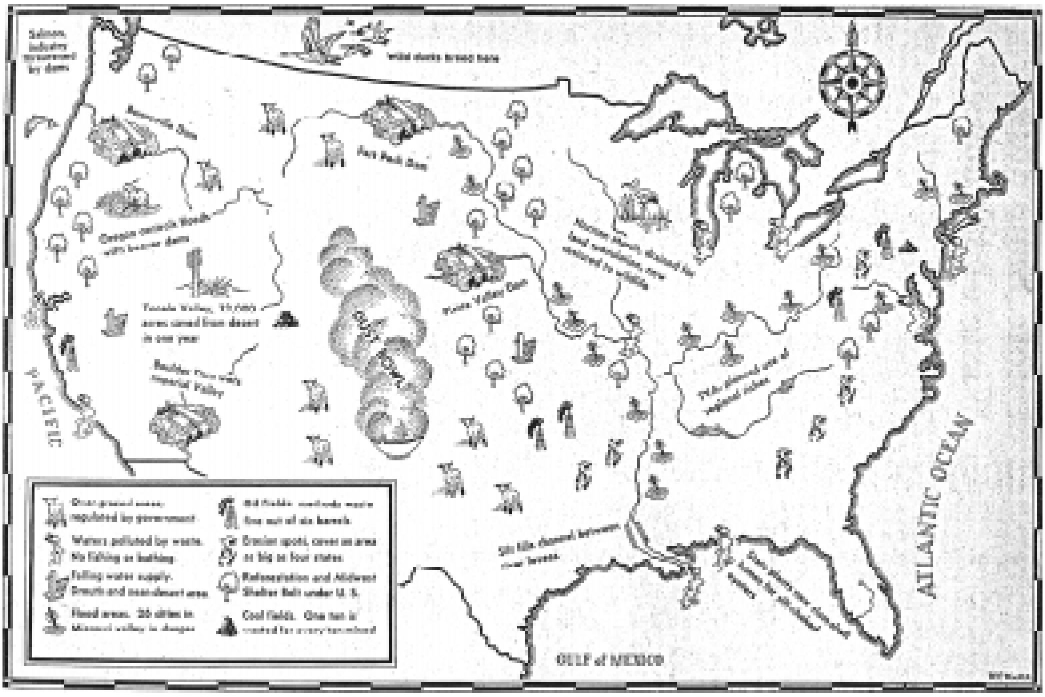
[26] *Scholastic,* 17 March 1934, 1.

[27] Ibid.

[28] *Scholastic,* 38. The directorship of the TVA was divided among three individuals with varying skills and interests. A. E. Morgan, an engineer and planner, was the first chosen. Morgan was a utopian planner who saw technology and planning as a vehicle through which the downtrodden could be helped. He was the only one of the three directors who had previously worked on extensive water planning projects. Morgan helped to choose Harcourt Morgan, a university president with roots in the South and an understanding of agriculture and the region's rural poor. David Lilienthal, a lawyer who came from the Wisconsin Public Utilities Commission, brought a flare for presenting ideas publicly about the complex world of power generation. He would prove to be a visionary during the controversy that would define TVA's later history. Personal correspondence and memos, FDR Presidential Files, FDR Presidential Library, Hyde Park, N.Y.

[29] Ibid.

[30] *Scholastic,* 26 September 1936.

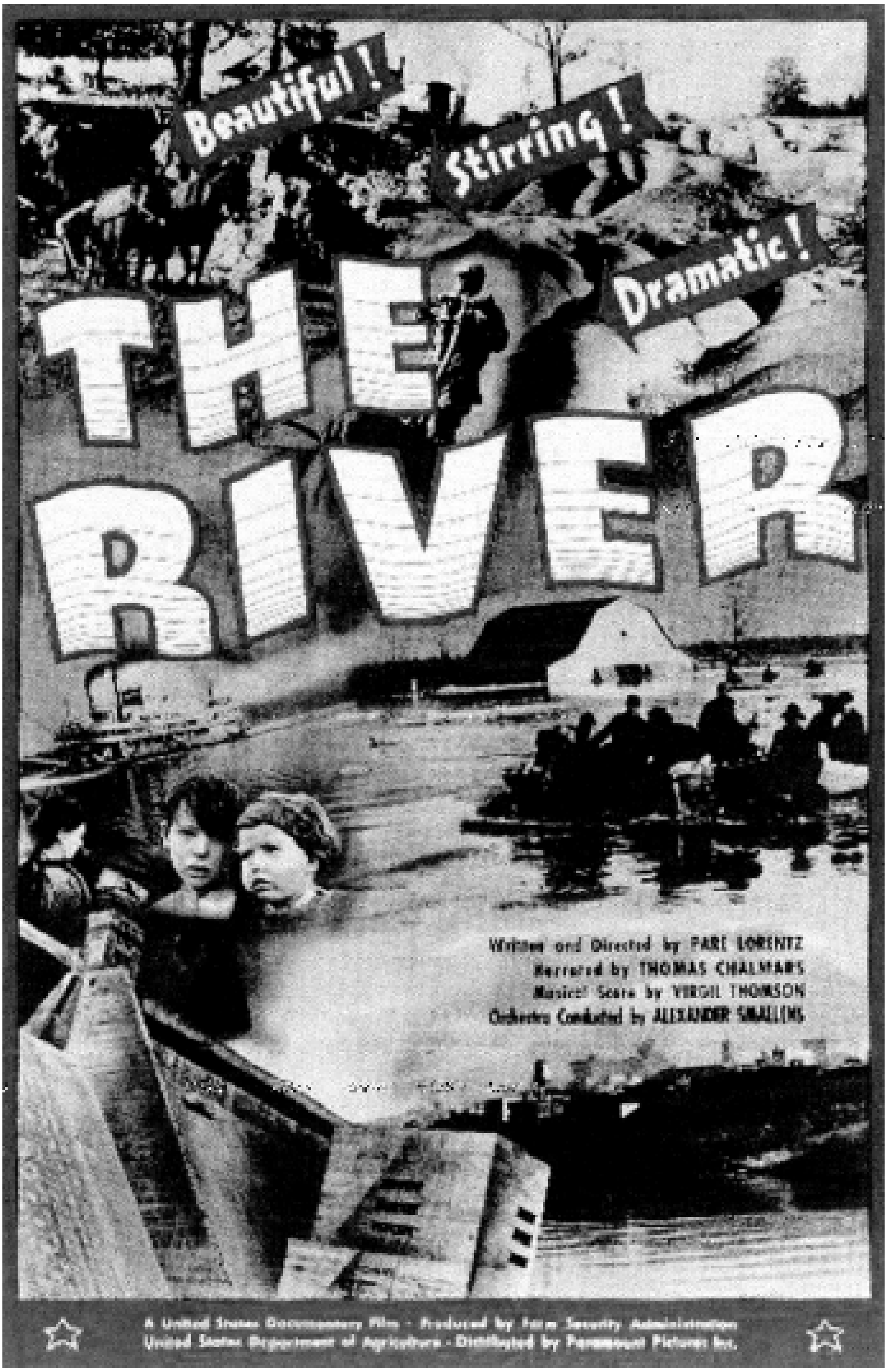

Salmon industry threatened by dams
wild ducks breed here
Fort Peck Dam
Oregon controls floods with beaver dams
Imperial Valley
PACIFIC
ATLANTIC OCEAN
GULF of MEXICO
Waters polluted by waste. No fishing or bathing.
Falling water supply. Drouth and near-desert area
Flood areas.
Erosion spots, cover an area as big as four states.
Reforestation and Midwest Shelter Belt under U. S.
Coal fields.

6. Conservation map of the United States, Scholastic*, 26 September 1936 (map: courtesy of Scholastic, Inc.)*

This issue of the *Scholastic* also features a treatise on the romantic roots of nature's appreciation in American literature. The lesson then turned scientific by discussing the causes of erosion and explaining what farmers must do when crop lands are washed away. It includes a map cataloging national projects in conservation (Fig. 6) and a cartoon that dramatically portrays a human peeling off the Earth's forests and crust as if he were scalping a human head.

The issue's main story is almost jarring to the reader in its seeming incongruous relation to the topic of conservation—"Government Ownership of Electric Utilities," highlighting the national high school debating topic for 1936–37. What could be the connection between romanticized views of the landscape and power generation? It takes little imagination to come up with TVA. The stories in this issue round out, TVA's mission, goals, and accomplishments but are presented under the heading of conservation, not TVA. The stories in this issue exemplify the popular image of TVA and illustrate the dramatic influence TVA had in redefining the national idea of conservation.

Possibly the most innovative form of New Deal propaganda, however, were documentary films that resembled newsreels. These films were offered free to schools for classroom use and to theaters for viewing prior to feature films in lieu of the usual newsreels. *The River,* a government film about river management and conservation, was directed by


Beautiful!
Stirring!
Dramatic!
THE RIVER
Written and Directed by PARE LORENTZ
Narrated by THOMAS CHALMERS
Musical Score by VIRGIL THOMSON
Orchestra Conducted by ALEXANDER SMALLENS
A United States Documentary Film · Produced by Farm Security Administration
United States Department of Agriculture · Distributed by Paramount Pictures Inc.

7. *Poster advertising* The River, *a Resettlement Administration film by Paramount Pictures, 1938 (photo: courtesy of the National Archives, Records of the Farmers Home Administration)*

Pare Lorentz (Fig. 7), the New Deal's most accomplished filmmaker and one of the finest documentary makers in history,[31] and released in 1937.

Today, *The River* is recognized as one of film's greatest documentary accomplishments, best viewed as a piece of government propaganda intended to rally support for the expensive projects being carried out in the Tennessee watershed. During the New Deal little effort was made to inform audiences that such films were not fact-based newsreels. Its promotional nature notwithstanding, *The River* had the lofty goal of advancing the theme of mutual dependence through ecology.

The film describes the industrial revolution that benefitted the rest of the country as taking "the tops off" of areas like the Tennessee Valley. "This was the price of one hundred cities and one thousand towns" along the Mississippi and its tributaries, a narrator says, as the camera pans over groups of poverty stricken people. The dialogue, written in brief, lyrical verse, lists the years of great floods then stops, as scenes roll of stunning footage from the massive 1927 flood, accompanied by sirens moaning in the background. Finally, the narrator's voice divulges the cause of the floods, squalor, and lack of agriculture: "There is no such thing as an ideal river in nature, but the Mississippi is out of joint."[32]

The River presents regional troubles as the fault and now the responsibility of the rest of the country. The nation had relied on the ports along the Mississippi and its tributaries for trade and had depleted the region for industrial purposes. Now that the region was suffering from the consequences of such exploitation, it was the entire nation's job to help bail it out. After establishing this national sense of responsibility, the film turns to modern America's ability to revive the region, specifically by supporting TVA's efforts.

In the film, conservation-minded land-use patterns are presented as the vehicle through which this national responsibility can be best channeled. This message was highlighted in the use of *The River* in American schools, where a study guide accompanied the film. One exercise simply explains, "Soil is the nation's greatest heritage. In 1908 Theodore Roosevelt said with laconic foreboding 'When the soil is gone, men must go; and the process will not take long.' Contrast graphically the speed with which our soil is being washed into the Gulf of Mexico with the time nature takes to lay an inch of topsoil on the land."[33] Hydrology and conservation in general had found a new entrée into the American classroom.

The study guide also seeks to extend such understanding beyond the classroom. To study the impact of conservation, the guide suggests that classes buy an acre of land and start a small nursery, an Izaak Walton Club, or a bird preserve. "Look about you," the guide encourages, and try and find anything that might make the natural environment more pleasant and efficient.[34] This type of individual empowerment would not become a full-blown element of the environmental movement until much later, yet here it is included under the idea of conservation.

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[31] Pare Lorentz, *FDR's Moviemaker: Memoirs and Scripts* (Reno: University of Nevada, 1992), 57.

[32] Pare Lorentz, *The River* (Washington, D.C.: Resettlement Administration, 1937), film documentary.

[33] *Study Guide: "The River," U.S. Documentary Film* (Washington, D.C.: 1937), 38.

[34] Ibid., 39–40.

The magazine and film each function as cultural artifacts focusing on one instrument of technology and its crucial role in conserving the Tennessee Valley's resources—the hydroelectric dam. *The River*'s footage of dam construction in the Tennessee Valley remains breathtaking, but the film's emphasis is more on holistic, scientific management than technological supremacy. The latter was in no short supply, however. "We had the power to take the river apart," intoned the narrator's voice. "We have the power to put it back together." The film's audacity seems overwhelming, though it is tempered by scenes of diligent, clean-cut, Civilian Conservation Corps–type poster boys scaling the dam's framework. They clearly have faith in the educated planning that they are implementing, and they elicit a similar reaction from the viewer.

Revisiting the Pastoral Ideal

Such innovation and planning presented Americans in the 1930s with the most progressive marriage of technology and society to date. Even more innovative, however, was the new relationship technology had forged with the natural environment. In his landmark book, *The Machine in the Garden,* Leo Marx writes that technology historically "provides the counterforce in the American archetype of the pastoral design."[35] These conflicting forces work toward reconciliation, with each form varying over time. TVA's "organic" planning presented a modern version of this reconciliation that blended ecology, technology, and aesthetic design. The landscape architects of TVA updated the pastoral ideal of the nineteenth century by imbuing it with scientific planning—manifest most dramatically in the form of the dam.

Marx's vision of the pastoral ideal grew out of utopian aspirations for man and nature's coexistence. TVA began with similar aspirations in the minds of Senator George Norris of Nebraska and Arthur Morgan, the founding director of TVA. The regional planning movement developed from the modern field of engineering that Norris and others believed could resurrect a downtrodden portion of society.[36] Morgan arrived at TVA as a visionary engineer with extensive experience in river management. For his chief planner, Morgan, the utopian dam builder, resisted pressure by Lewis Mumford and others to hire a regional planning expert. Instead, he chose Earle Draper, a landscape architect (see Fig. 8), whose orientation to conservation promised to create a model of pastoral idealism based less on sublimity and more on efficiency.

Unlike much of the New Deal's landscape planning, TVA, under Draper's guidance, did not abandon aesthetic concerns. Draper raised the discipline of landscape architecture to its apex of development and application, and made TVA the culmination of the field's "early initiative in planning."[37] While director of TVA's Division of Land Planning and

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[35] Marx, *Machine in the Garden,* 26.

[36] Many sources offer this insight. The most interesting might be Thomas Hughes, *American Genesis* (New York: Penguin, 1990), which places TVA as a monumental application of American technological "enthusiasm" between 1870 and 1970. Hughes argues that TVA provided a model of planning and bureaucratization that permeated the American corporation, government, and even everyday life.

[37] Cutler, *Public Landscape,* 135.

8. Earle Draper, far left, as part of the TVA Architectural Group, 1939 (photo: courtesy of TVA)

9. Dam and bank fishing, Guntersville, Alabama (photo: courtesy of TVA)

Housing, Draper supervised architects, engineers, social scientists, planners, geographers, and a core of nearly twenty landscape architects. The actual design of the physical landscape became a crucial portion of planning, at least partly because of its symbolic potential.

Morgan and Draper's TVA represented a national trend. As journals for planning were founded and forty-two state planning boards were established under the guidance of a national planning board in the 1920s, planners and landscape architects found themselves in great demand.[38] Landscape architect Phoebe Cutler writes that despite such a national trend, once TVA was established in 1933, it became the "spiritual home" for all of landscape architecture.[39] The magical hand of federal authority gave designers carte blanche to make the valley an ideal, even if the plan necessitated moving families, towns, or forests to more convenient locations. Unlike many previous products of landscape architecture, however, this landscape was intended as a multi-use area based on conservation.

The conservationist Gifford Pinchot and others proved that the machine of conservation did not require scenery. And as Olmsted, Andrew Jackson Downing, and many others had shown, landscape architecture did not require conservation. The landscape of TVA, however, provided a new paradigm for both scenery and conservation. TVA's organic planning took the engineering of conservation and conditioned it with natural forms, providing a point of reference for future landscape architecture.

The landscape designers of TVA were commissioned to conceal and integrate the hardware of resource conservation within the planned valley, described by Cutler as the "ultimate watershed demonstration area."[40] Of course, as Figure 9 reveals, TVA possessed a unique aesthetic quandary: Could its centerpiece, the dam, acknowledged as socially and technologically progressive, be absorbed into an aesthetically appealing scene? The act of stopping a river with such a physically overwhelming site as the Norris Dam would leave even the most well schooled observers breathless. Architectural historian Paul Zucker writes, "Regardless of whether the contour of the dam is curved or straight it is its grandeur and clarity of form and its kinship with nature that strikes us. The deep gorges below create space sometimes comparable to the interior of a cathedral."[41]

Undoubtedly, TVA designers construed their dams much differently than would have the U.S. Corps of Engineers or Bureau of Reclamation.[42] The multipurpose dams of TVA were figuratively and literally intended to function less to sublimate natural forces than to coordinate those forces within human society. Most often, TVA presented its dam sites as aesthetic scenes of pastoral splendor such as that seen in Figure 10. To the left of the women gazing at the designed river valley in the distance, one can clearly see the figure of a dam,

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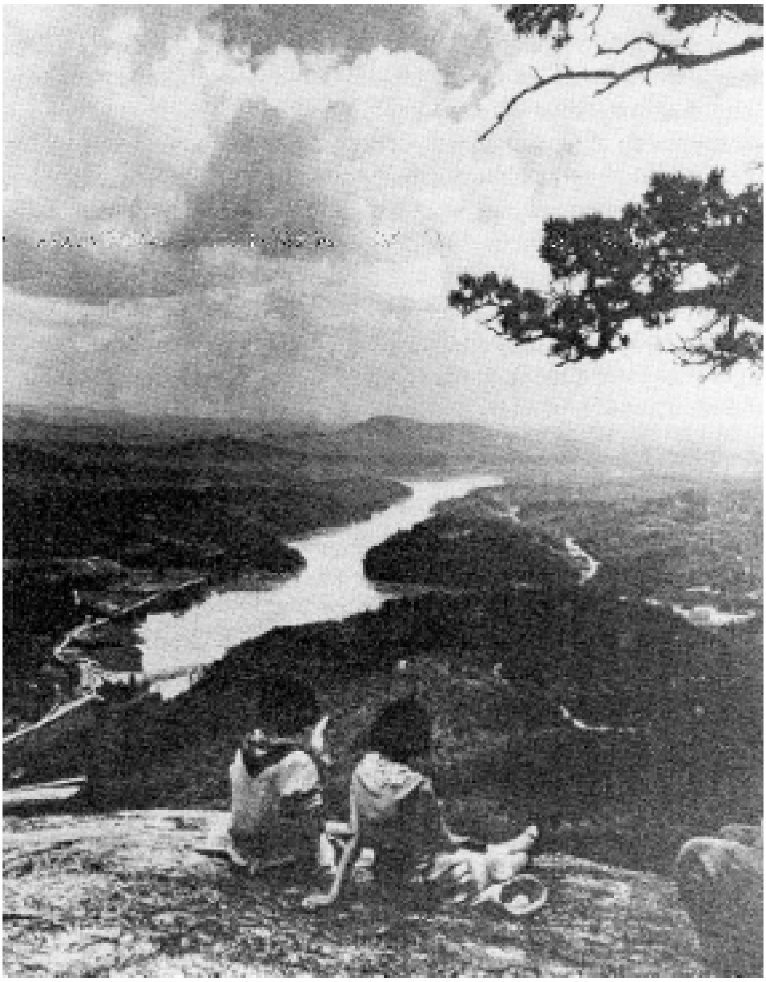
[38] These start-up journals include the *Planners' Journal* and *Planning and Civic Comment.* Draper was the first editor of the *Planners' Journal.*

[39] Cutler, *Public Landscape,* 135.

[40] Ibid., 143.

[41] Paul Zucker, *American Bridges and Dams* (New York: Greystone Press, 1941), 15.

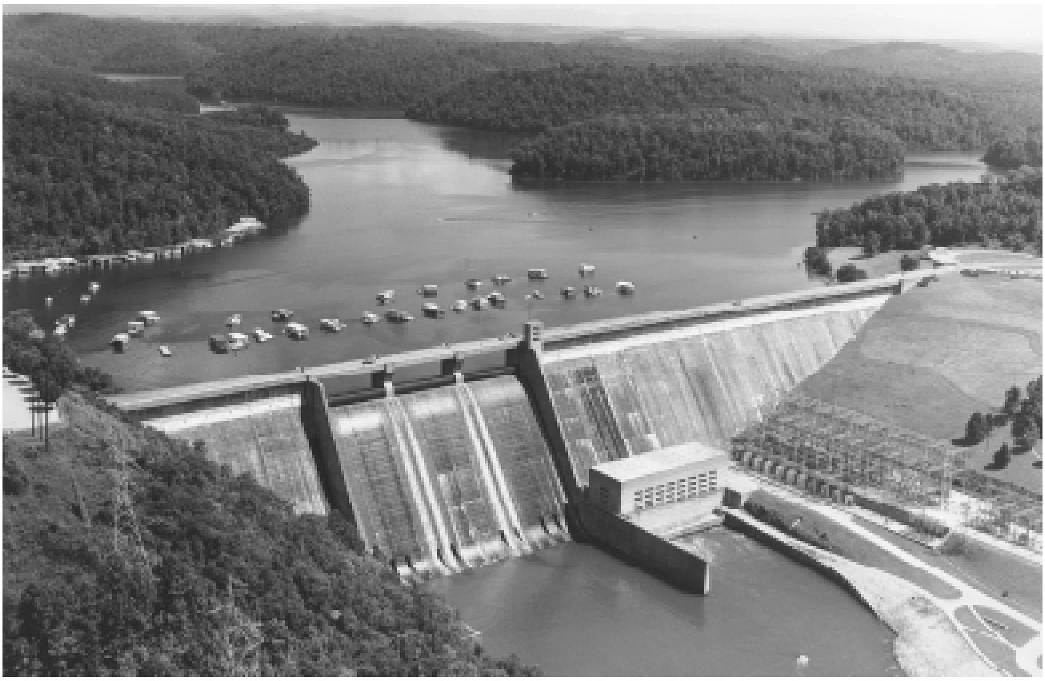
[42] The recent work of historian Donald C. Jackson helps researchers evaluate dams not so much for what they do, but for how they look, namely, their structural designs. Donald C. Jackson, *Building the Ultimate Dam* (Lawrence: University of Kansas Press, 1995), 2.



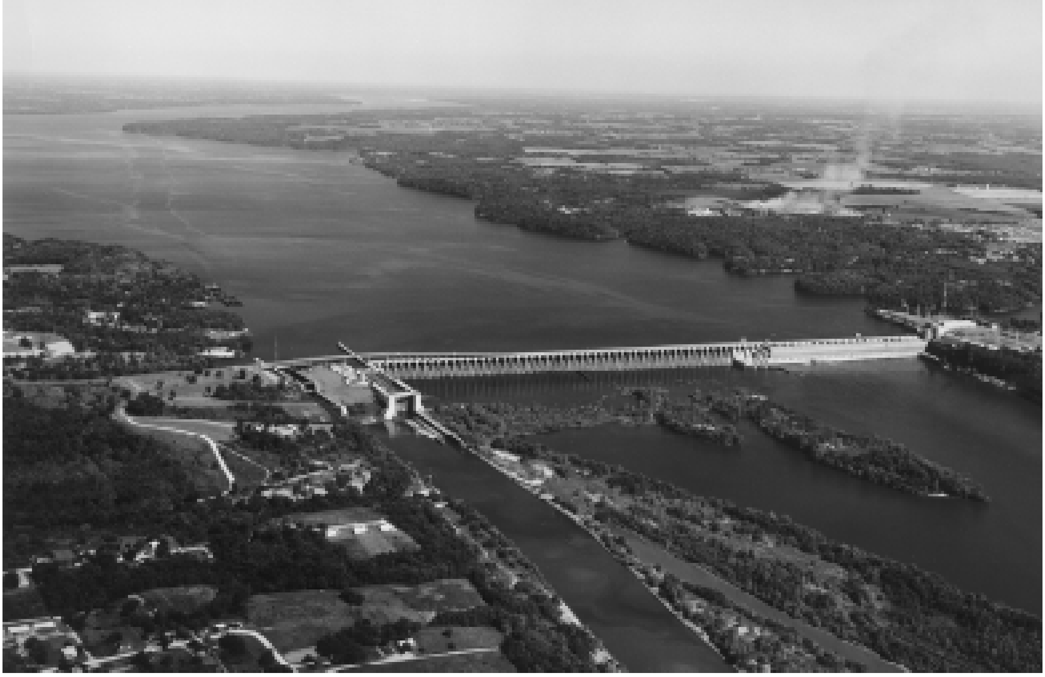
10. View of Lake Lure, North Carolina, 1938, in Scenic Resources of the Tennessee Valley: A Descriptive and Pictorial Inventory *(Washington, D.C.: Government Printing Office, 1938) (photo: courtesy of TVA)*

which has been integrated into this pastoral view. Of course, the integration of such diverse elements was more easily accomplished from a distant vantage point; however, TVA offered visitors the opportunity to compose such scenes for themselves by designing overlooks into every dam site and recreation area.

Often, these highly stylized outlooks offered visitors a composite view of the middle landscape—the dam, reservoir, and recreational facilities. The sleek, smooth lines of the international style of the overall landscape design functioned to integrate the dam and power house with the site's recreational features, including the overlooks and vistas such as those seen to the right of Norris Dam in Figure 11. Clearly, the dams were the major attraction for many tourists, though not for all. Accordingly, TVA designers of the Norris site concentrated the recreation areas around the top of the dam, which made viewing, or interacting with, the dam optional. By contrast, recreation areas lie at the base of Wilson Dam (Fig. 12) which, as part of the original Muscle Shoals site, preceded TVA construction by fifteen years.



11. Aerial view of Norris Dam. Due to timing, TVA had the Bureau of Reclamation design the dam before carefully placing it within a larger landscape. (photo: courtesy of TVA)



12. Aerial view of Wilson Dam in Alabama (photo: courtesy of TVA)

Reaping Scenic Resources

By the late 1930s, the scenic resources of the Tennessee Valley became a primary force in TVA's effort to market its ideal vision of resource management. The recreational version of the pastoral ideal—complete with dams and reservoirs—became the symbol of conservation. The valley was an exhibition of well-planned land use leading to natural splendor, yet the nature that had been created was not at all the reconstructed climax community endorsed by Clements and other scientists. Instead, the valley was an idyllic scene of parks filled with a fairly homogenous, man-made nature. But it looked much better to Americans than floods and erosion.

In 1938, TVA released *The Scenic Resources of the Tennessee Valley: A Descriptive and Pictorial Inventory.* The title alone, specifically the term *inventory,* reveals that TVA planners considered scenery much like waterpower—that is, as a commodity produced by their scientific planning to be measured and monitored as an indicator of efficiency. The use of this product was twofold: first, next to the dams themselves, this "new nature" was the best symbol of successful planning in the region and representative of a possible end product to scientific planning anywhere; and, second, scenic resources signified the potential revenue generated by tourists vacationing at TVA lakes.

Tourism proved to be a much more significant boost to regional economies than any planner had foreseen. After the completion of TVA projects, numerous communities followed the example set by Chattanooga, Tennessee, which dubbed itself the "Crossroads of the South." In 1940, the *Chattanooga Times* bombastically proclaimed the city "Manufacturing Center, Agricultural Center, Shopping Center, Traffic Center, Tourist Center, Scenic Center, And Now . . . Center of 'The Great Lakes of the South.'"[43] After World War II, the recreational landscapes of TVA created some of the most popular attractions in the South. As late as 1960, TVA's scenic resources drew 42.5 million tourists a year.

A *New York Times* discussion of the *Scenic Resources* reveals a shift in the public's view of scenic resources and their importance. "Our forefathers," writes the reviewer, "would have scratched their heads in wonderment if they had come across such an expression as 'scenic resources.'" During the 1930s, however, this term had become part of the American lexicon:

> Nature bothered the pioneer rather more than she delighted him. The mountains had to be crossed, the rivers forded or ferried, water found in the deserts, trees girdled or cut down to make clearings where corn would grow. Not until a good deal of the countryside was tamed could we really enjoy the wildness of the remaining part. Not until pretty recently have we perceived that this wildness has to be cherished or it will be lost. . . . So "scenic resources" now mean something definite to us, just as timber resources or mineral resources did a few decades ago. They are something we need to sustain or improve the quality of our lives.[44]

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[43] *The Chattanooga Times,* 25 August 1940.

[44] *New York Times,* 29 May 1938, sec. 4, p. 4.

Though many people had quarreled with the power policy of TVA, the reviewer notes that few could quarrel with its "scenery policy."

Following TVA's attempt to establish the value of scenic resources in the popular culture, it began a campaign to link aesthetics with scientific processes. In this fashion, TVA's technology joined natural science and aesthetic scenery.[45] A *Harper's* article from 1939 explains that landscapes were no longer inert or changeless. The sciences of ecology and anthropology, which constitute the foundation of TVA practice," have taught that man himself is not a watcher, but like other living things, is a part of the landscape in which he abides. This landscape, including its living constituents, is an integrated whole."[46] Such thinking was linked with Leopold's idea of unified conservation, in which resources were managed and designed according to their relationship to the ecological whole. The author concludes by saying that scientists of the future must continue to work with an awareness of social and economic processes, as well as aesthetics.[47]

Such an awareness, of course, recalls the principles upon which Olmsted and Downing founded the field of American landscape architecture during the nineteenth century. Olmsted's ideas about the democratizing influence of outdoor recreation came to define the American parks movement.[48] Around the turn of the twentieth century, Pinchot and other conservationists seized this terminology and applied it to national park areas and forests.[49] Such ideas clearly informed TVA's policy toward forest management.[50]

TVA's 1940 pamphlet "Forests and Human Welfare" discusses the agency's forest policies and the crucial ecological and curative roles played by trees (Fig. 13). Presenting science and scenery—the major components of TVA conservation—as the process and end product of good land-use practices, the pamphlet describes the improved living conditions that characterize regions of balanced land use. By employing before and after photos of certain tracts of eroded land, the pamphlet suggests how an invigorated natural landscape corresponds with the resurrected spirits of a region's population.

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[45] For a better understanding of aesthetic scenery, see Paul Shepherd, *Man in the Landscape* (College Station: Texas A&M University Press, 1991).

[46] Paul B. Sears, "Science and the New Landscape," *Harper's,* July 1939, 207.

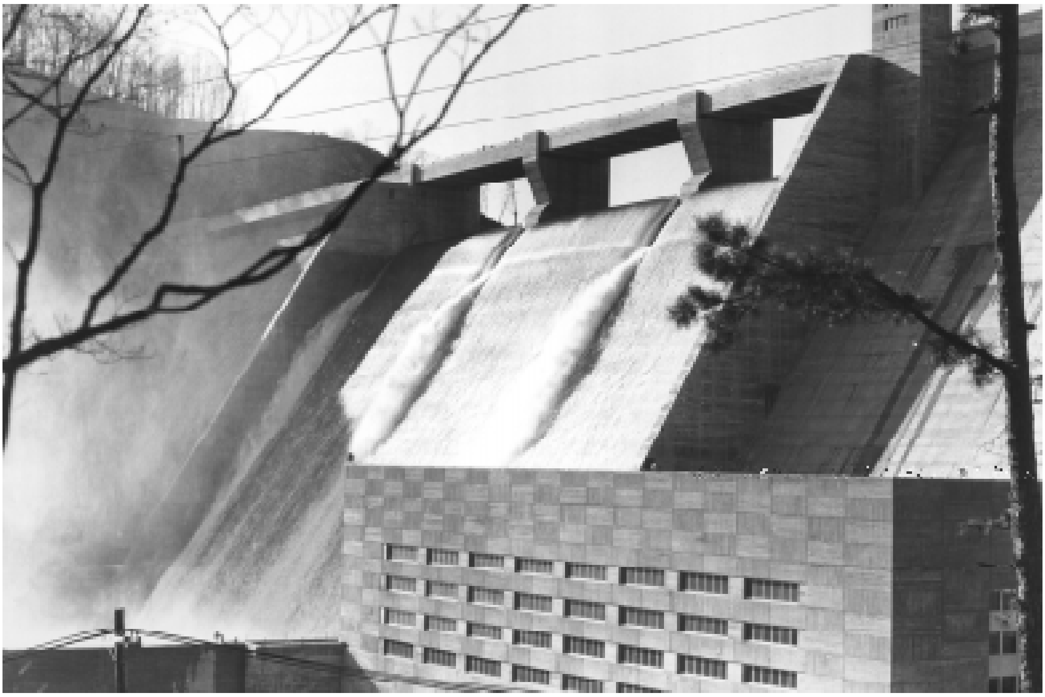
[47] Ibid., 216. Leopold appears not to have construed "aesthetics" as a criteria of conservation. He often praised the natural beauty of the simple details of nature and would have likely argued that American sensibilities needed to change more than the appearance of the natural environment. The "land ethic," as he discusses it, would have necessarily fed aesthetically pleasing nature. The argument here has *not* sought to link TVA's environmental ethic with Leopold's "land ethic." While TVA shared a unified, interdependent view of nature with Leopold, the naturalist would likely have disapproved of the intensity with which TVA used natural resources and disturbed natural systems.

[48] See Frederick Law Olmsted, *Public Parks and the Enlargement of Towns* (New York: Arno Press, 1970).

[49] Gifford Pinchot, the first American to be formally educated in forestry, oversaw the massive expansion of the national forests under Theodore Roosevelt's presidency. His model of scientific forestry became a hallmark of the growing American conservation movement, which sought to conserve resources through proper management and use. See Stephen Fox, *The American Conservation Movement;* Roderick Nash, *Wilderness and the American Mind;* Samuel P. Hays, *Conservation and the Gospel of Efficiency;* Gifford Pinchot, *Breaking New Ground.*

[50] "Forests and Human Welfare," Tennessee Valley Authority, 1940.

13. Cover, "Forests and Human Welfare," 1940 (photo: courtesy of TVA)



14. Norris Dam reveals the sharp intensity of the international style design. (photo: courtesy of TVA)

While orchestrated management of all of the valley's resources made such improvements possible, the entire process, of course, depended on control of the river. For this reason, the hydroelectric dams became the most crucial cog in TVA's conservation management, symbolically verifying the success of its heavy-handed instrumentalization of nature.

The Scene of Conservation Planning

The technology of TVA, whether applied to dams or water fountains, became a symbol of progressive design to Americans, culminating in a 1941 exhibit at the Museum of Modern Art. *Time* magazine's coverage of the exhibit compares TVA's accomplishments with Egypt's Pyramids, Rome's Forum, and China's Great Wall. "Like them," reads the article, "[TVA] will go down as one of the most permanent achievements of its civilization, [and] may even remain a landmark long after its usefulness is over."[51] More than the specific technological developments on display, however, the exhibit focused on TVA's style of efficient use. The centerpiece of this vision was the gravity dam (Fig. 14).

Through their ability to halt the rampant floods that had plagued the Midwest throughout the early 1900s, TVA dams solidified in the public consciousness the effectiveness of scientifically based planning and land use. One 1940 observer stipulated that TVA dams had perfected "the architecture of public relations."[52] Moreover, the inclusion of the dams in a larger landscape design aided the public in focusing on the issue of planning rather than just on the accomplishment of one dam in particular. While many Americans debated TVA's jurisdiction, power policy, and leadership, few questioned its dams or efficiency; in fact, the two images often seemed to be one in the same.

During the revolution in land use that accompanied the New Deal, conservation became an act joining human technology, science, and nature in an equation that translated into economic prosperity. This is an equation still in use today and one in which the federal government maintains a primary role. Yet environmental planning in the 1990s has shifted from the idea of regional planning that Lewis Mumford and others supported in the 1930s. Rather than planning "educated" land use, federal authority in the 1990s exerted, through efforts by the Environmental Protection Agency, to enforce the current environmental ethic.[53] While this development certainly benefits the natural environment, its flawed enforcement also recalls the problems that characterized the earliest environmental planning of the 1930s. Only during a time of national emergency, when support could be galvanized among Congress and the public, was FDR able to use the government in ways that were impossible before the Great Depression. These efforts suggest the potential to which the federal energies could now be applied; however, today's planners would do well to reappraise TVA as a model of regional planning. Its limited scope may have been its saving grace. The lack of a regional emphasis by the Natural Resource Planning Board, established by FDR in 1933 to oversee federal efforts to manage and conserve natural resources, was one of many factors that kept the board from developing, and it was dissolved ten years later.[54]

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[51] *Time,* 12 May 1941, 46.

[52] F. A. Gutheim, "Tennessee Valley Authority: A New Phase in Architecture," *Magazine of Art,* September 1940, 518.

[53] In its current role the EPA serves as an environmental police force—though without real power to enforce beyond administering fines—that reacts to environmental problems instead of proactively enforcing modes of resource management consistent with conservation. On this transformation, see, for instance, Robert Gottleib, *Forcing the Spring: The Transformation of the American Environmental Movement* (Washington, D.C.: Island Press, 1993).

Even during the 1930s, New Dealers often failed to realize that they were participating in an entirely unique and momentary governmental opportunity. FDR and others intended that TVA would be the first of many "regional authorities" designed to promote conservation within watersheds. A 1945 letter from FDR and Secretary of the Interior Harold Ickes explains the administration's support to the president of the National Farmers Union: "I agree that the regional authority method of handling Federal conservation and development activities is sound and that such agencies should be created throughout the West."[55] As elaborated in the letter, a series of such authorities were to be proposed simultaneously and then orchestrated by the Department of the Interior.

Had they been implemented, these systems of recovery, development, and conservation would have proven revolutionary in American land use. By design, these authorities would have possessed federal jurisdiction, but less than TVA had held. Sadly, these plans dissolved in the shadow of the legal fights that befell TVA in the late 1930s, when American discomfort over the incursion of the federal government into the realm of private utilities reached a high point. Indeed, such wrangling seems to have presaged the current angst focused against the Environmental Protection Agency and environmental regulation in general.

Following legal decisions favoring TVA, the support seen in the early 1930s for regional planning might have been rekindled had it not been for World War II, which forever changed TVA and its dreams of utopian planning. In essence, the war quickly changed the job and image of TVA to that of a wartime agency.[56] Hydroelectricity was used to power the Oak Ridge nuclear test site and create materials for explosives. TVA also diversified its modes of energy production to include coal mining, particularly large-scale strip mining. This new emphasis subverted TVA's original mandate, permanently divorcing the agency from its utopian roots in regional planning and turning it into a utility.

TVA's role in the twentieth-century movement toward federal involvement in environmental regulation suggests the limits of engineering and planning in social or ethical change in American society. The ethical role of TVA-created pastoral ideal only functioned while it was supported by New Deal rhetoric and propaganda. TVA's planned landscape, instead of symbolizing effective conservation, would become an accepted, functioning portion of the natural landscape.

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[54] The planning board was an attempt to plan and administer economic and conservation planning nationally. Because of its national scope, it can be seen as a precursor of the EPA. This scope, however, precluded it from receiving the critical regional support of congressional representatives seeking to develop important constituencies. The board was dissolved in 1943. See Creese, 324–36, and Richard Lowitt, *The New Deal and the West* (Norman: University of Oklahoma Press, 1993).

[55] Memorandum and letter, Harold Ickes to FDR, FDR Presidential Files, FDR Presidential Library, Hyde Park, N.Y., 15 January 1945.

[56] Prior to U.S. involvement in World War II, Lilienthal, then director of the TVA, proposed plans for using TVA resources and power generation for the war effort.

The symbols and realities of TVA introduced many Americans to conservation for the first time. In 1938, as part of its " Living in Contemporary America" program, a New York City high school sent its students to study TVA, considered the symbol of contemporary America. " The whole idea of planning," said the teacher, Elmina R. Lucke, "brings us to a critically new interpretation of democracy. . . . Above all, we want the students to lose the provincialism of New York City and to feel themselves as part of the United States." [57] The place to gain this feeling, was the Tennessee River Valley—the new symbol of the nation. The dam was not the symbol; rather, the truest representation of TVA's accomplishments was the valley as a whole.

The natural scene of this valley can never be separated from the technology that also produced the gravity dam, water fountain, or grassy vista from which to view the reservoir. The simplicity of such modern designs shared conservation's common-sense approach to the natural environment. The scenic beauty of this new pastoral ideal was a symbol of conservation in practice, as humans and nature prospered in the shadow of mammoth gravity dams. Mumford and others believed technology was the answer to environmental problems. TVA tried to prove it.

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[57] *New York Times,* 28 June 1938.

Ian McHarg, Landscape Architecture, and Environmentalism: Ideas and Methods in Context

Anne Whiston Spirn

In 1959, Ian McHarg introduced prominent scientists, humanists, and poets to landscape architecture by inviting them to speak in his course Man and Environment at the University of Pennsylvania. In 1969, he published *Design with Nature*, a finalist for the National Book Award and a book that led to fundamental changes in the teaching and practice of landscape architecture (Fig. 1). For the next decade, he promoted landscape architecture as the instrument of environmentalism and helped shape national policy on the environment. McHarg is among the very few landscape architects since Frederick Law Olmsted Sr. who have commanded widespread notice, respect, and influence outside the design and planning fields.[1] But what, exactly, are his contributions to landscape architecture within the context of environmentalism? While there is consensus on the importance of his influence, there is disagreement over the nature of his legacy. A perplexing figure, he has always generated controversy within the profession, at least among North Americans. The conflicts and inconsistencies embodied in McHarg's words and actions are those of the profession itself—the tensions between preservation and management, nature and culture, tradition and invention, theory and practice.

This essay draws mainly from primary sources—Ian McHarg's own writings, departmental archives, professional reports, interviews, and my own firsthand experience. I was a graduate student in landscape architecture at the University of Pennsylvania in the early 1970s and worked with McHarg in his office from 1973 to 1977. Some of the projects I discuss are ones I worked on myself, including the Woodlands New Community and Pardisan. Others are projects with which I had less direct experience. As a faculty member at Harvard from 1979 to 1986, I achieved some critical distance before returning to Penn as a professor (and chairman of the department from 1986 to 1993). I am grateful to Ian McHarg, Meto Vroom, Michael Hough, Carol Franklin, Narendra Juneja, and Richard Westmacott for their insights and information and to Michel Conan for his wise advice and encouragement.

[1] Books by Loren Eiseley and René Dubos were considered for the National Book Award in the same year but were not selected as finalists. While the profession seems to have a sense of entitlement about outside commendation, no one other than McHarg has attained the same degree of recognition and influence outside the field.

1. Design with Nature *(Garden City, N.Y.: Natural History Press, 1969) led to fundamental changes in the teaching and practice of landscape architecture.*

McHarg, Landscape Architecture, Environmentalism

Ian McHarg was born in Scotland in 1920, fought in World War II, then studied landscape architecture and city planning at Harvard University from 1946 to 1949.[2] After graduation, he worked and taught in Glasgow and Edinburgh, then returned to the United States in 1954 as an assistant professor of city planning at the University of Pennsylvania. At the time of his arrival, the Department of Land and City Planning, founded in 1950, was the most exciting planning program in the country. In a photograph from 1959, surrounded by colleagues at Penn, McHarg looks confidently into the camera (Fig. 2). He stands between Lewis Mumford and J. B. Jackson; to their right is William Wheaton, and to their left is David Crane, Louis Kahn, and Holmes Perkins. (All but Jackson were members of the Penn faculty.) Three years earlier, in 1956, McHarg had founded a newly reinstated Department of Landscape Architecture, for which he gradually built a faculty. The 1961 list of faculty and visitors included Karl Linn, as assistant professor, and Jack Fogg, a botanist, as an associated faculty member; Gordon Cullen, Aldo Van Eyck, and Denise Scott-Brown as research staff; and Garrett Eckbo, Philip Johnson, Dan Kiley, Robert Royston, and Peter Shepheard as visiting critics.[3] This list conveys McHarg's extraordinary ambition for the fledgling department; composed mainly of architects and landscape architects, however, it

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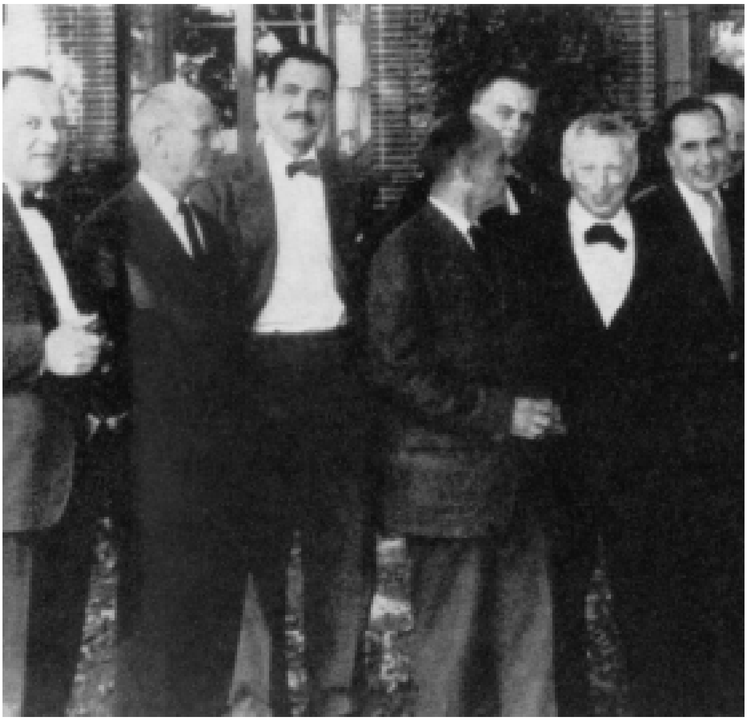
[2] Among the courses he took was John Kenneth Galbraith's The Economics of Agriculture.

[3] Reproduced in Ian McHarg, *Quest for Life* (New York: John Wiley, 1996), 133.



2. Portion of a photograph by Grady Clay from Architecture*, January 1959, showing (from left to right) William Wheaton, Lewis Mumford, Ian McHarg, J. B. Jackson, David Crane, Louis Kahn, and Holmes Perkins (photo: courtesy of the Architectural Archives of the University of Pennsylvania)*

did not yet exhibit the remarkable range and depth of intellectual concerns that were to characterize the faculty by the end of decade. The ecologists and geologists who became influential members of the faculty later in the 1960s had not yet arrived.

The development of landscape architecture and city planning in the twentieth century and the context of American environmentalism put McHarg's contributions in perspective. Landscape architecture and city planning share a common history in the United States. Many of the first metropolitan and regional plans in the nineteenth century were developed for park systems that integrated recreation, transportation, storm drainage and flood control, and wastewater management, and that created a framework for future urban development. The authors of such plans were landscape architects like Frederick Law Olmsted and his sons, John Charles and Frederick Law Olmsted Jr., Charles Eliot, and John Nolen. Such landscape architects as these devised plans for entire new communities and were among the founders, in 1909, and first presidents of the National Conference on City Planning.[4] The first course in city planning at an American university was initiated in 1909 at Harvard University's School of Landscape Architecture. By 1923, the school offered a

[4] See Anne Whiston Spirn, "Urban Nature and Human Design: Renewing the Great Tradition," *Journal of Planning Education and Research* 5 (autumn 1985): 39–51; Cynthia Zaitzevsky, *Frederick Law Olmsted and the Boston Park System* (Cambridge, Mass.: Harvard University Press); John L. Hancock, "Planners in the Changing American City, 1900–1940," *Journal of the American Institute of Planners* 33 (1967): 290–304; Alex Krieger and Lisa J. Green, *Past Futures: Two Centuries of Imagining Boston* (Cambridge, Mass.: Harvard University Graduate School of Design, 1985).

city planning option in the master's degree program, and, in 1929, a group of landscape architecture faculty established the first school of city planning in America, with Henry Vincent Hubbard as its first chairman.[5] These events had a great impact on landscape architecture at Harvard and other universities. Those faculty who founded city planning were interested in broad social and environmental issues, and they and their colleagues in other institutions wrote some of the first city planning textbooks.[6]

The faculty who remained in landscape architecture, at least at Harvard, were primarily interested in garden and park design. When McHarg pursued joint degrees in landscape architecture and city planning at Harvard in the 1940s, he bridged a persistent schism there; later, in his teaching and practice, he reintegrated regional planning and landscape architecture. But the tension between planning and design in landscape architecture still persists.

Unlike McHarg, most landscape architects have neither the knowledge nor the interest to embrace the entire scope of the discipline—the shaping of landscape from garden to region—within their practices and theories. The synthesis forged by McHarg and others has tended to dissolve, not because of inevitable strains imposed by professional practice and the demands of specific projects, but because the study and practice of the two ends of the spectrum—garden design and regional planning—have tended to attract individuals of dissimilar temperaments who borrow methods and theories from disparate disciplines rather than generating them from within the core knowledge and actions of landscape architects.[7]

In Great Britain, a close relationship also existed between landscape and town planning, though they developed differently than in the United States.[8] Patrick Geddes, a Scottish biologist and geographer, advocated the unity of city and region as a basis for planning. He presented these ideas in an exhibit for the Cities and Town-Planning Exhibition of 1911 and elaborated upon them in his book *Cities in Evolution,* published in 1915. His ideas were influential in North America, particularly for Mumford and fellow members of the Regional Planning Association. In his autobiography, Mumford described how he imported Geddes's book from

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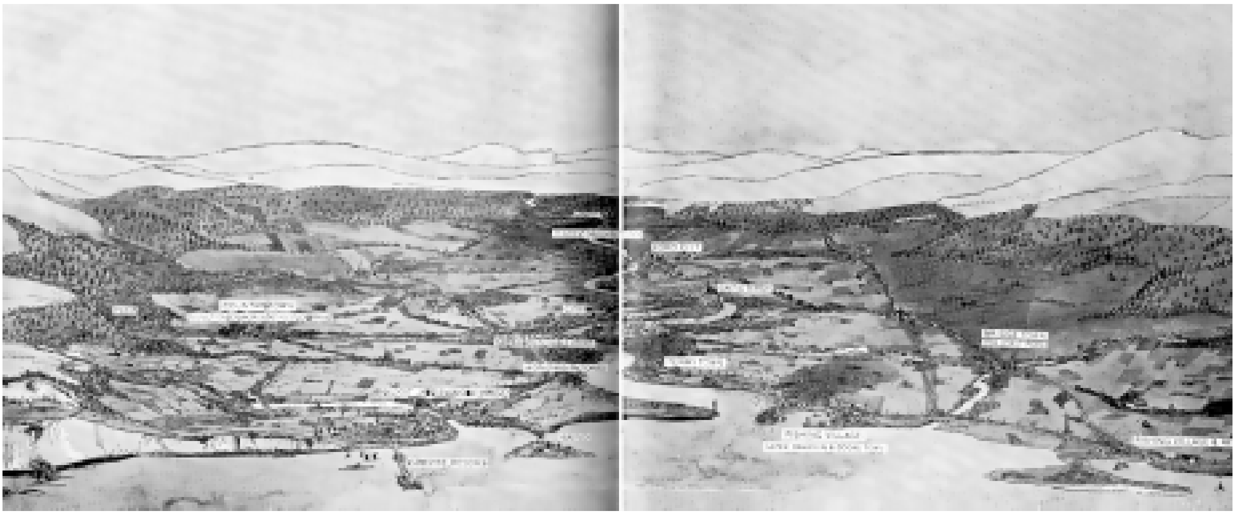
[5] Hubbard was married to Theodora Kimball, the librarian responsible for the collections of the Schools of Architecture, Landscape Architecture, and City Planning at Harvard. When Hubbard and other faculty seceded from landscape architecture to form the new school, Kimball reclassified all related books to city planning. Norman Newton, personal communication, 1980. A young faculty member in landscape architecture at the time, Newton reported that this move generated hard feelings between those who left and those who remained in the School of Landscape Architecture.

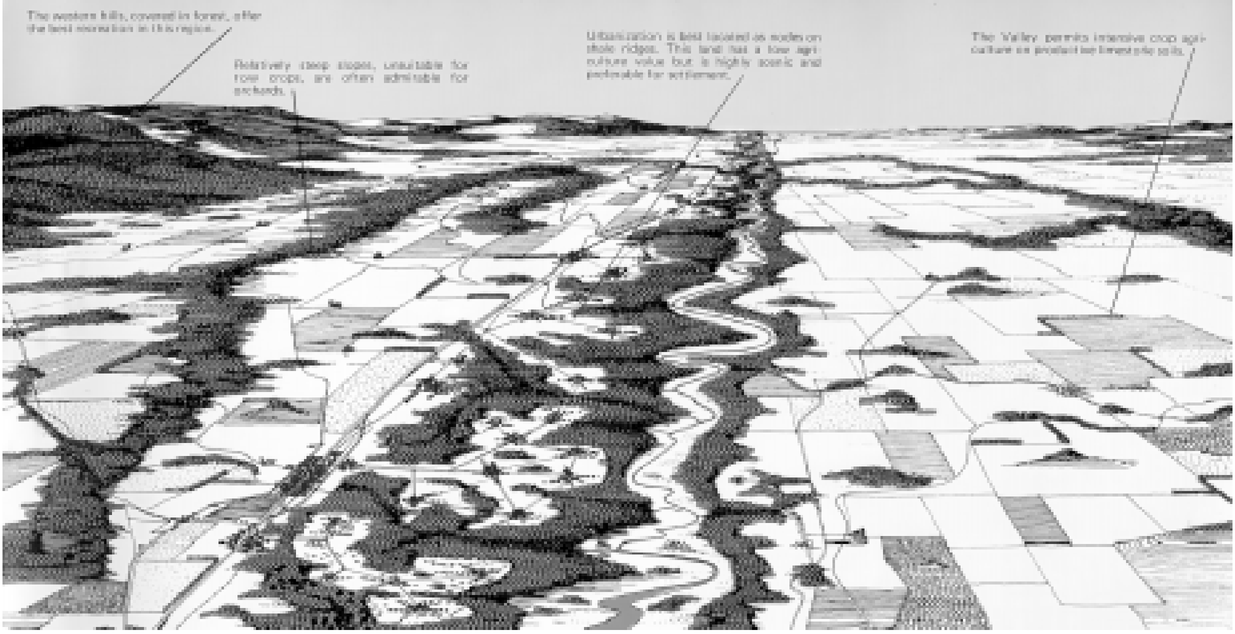
[6] Examples include John Nolen, ed., *City Planning* (New York and London: D. Appleton and Co., 1916), Theodora Kimball and Henry Hubbard, *Our Cities To-day and To-morrow: A Survey of Planning and Zoning in the United States* (1929; reprint, New York: Arno Press, 1974).

[7] Many tensions and contradictions in landscape architecture stem from inherent, unresolved conflicts among the disciplines it draws from. I have treated this subject in "The Authority of Nature: Conflict and Confusion in Landscape Architecture," in *Nature and Ideology: Natural Garden Design in the Twentieth Century,* ed. Joachim Wolschke-Bulmahn (Washington, D.C.: Dumbarton Oaks, 1997).

[8] J. C. Loudon produced a plan for metropolitan London, "Hints for Breathing Places for the Metropolis" (1829), discussed in Melanie Simo, "John Claudius Loudon: On Planning and Design for the Garden Metropolis," *Garden History* 9, no. 2 (1981): 184–201.



3. The "valley section" (from Cities and Town-Planning Exhibition *[1911], reprinted in Patrick Geddes,* Cities in Evolution *[London: Williams and Norgate, 1949]).*


The western hills, covered in forest, offer the best recreation in this region.
Relatively steep slopes, unsuitable for row crops, are often admirable for orchards.
Urbanization is best located as nodes on shale ridges. This land has a low agriculture value but is highly scenic and preferable for settlement.
The Valley permits intensive crop agriculture on productive limestone soils.

4. Great Valley physiographic region, Potomac River Basin Study of 1965–66, reproduced in Design with Nature.

England in 1914: "No one can possibly guess the exciting effect of that book on me."[9] A new edition of the book was issued in 1949, the year McHarg returned to Scotland, and Geddes's papers were at the Glasgow College of Art, where McHarg taught a course in 1952.[10] Though McHarg does not acknowledge him as an influence, Geddes's "valley section," the model by which he organized his analysis of a city and its region, resembles the methods of McHarg and his colleagues from the 1960s (Figs. 3 and 4). That Geddes's work, its aims and methods, prefigured much of McHarg's does not diminish McHarg's contribution, but failure to appreciate the importance of Geddes's work as a precedent is telling. The desire to be seen as original is typical of landscape architects, who fail repeatedly to build upon prior efforts and often reiterate ideas without advancing them significantly.[11]

From 1897, when John Muir and Gifford Pinchot split bitterly over grazing rights in Yosemite, a persistent schism in American environmentalism has divided those who advocate preserving natural landscapes and protecting them from the disturbing influence of humans (Sierra Club, Wilderness Society, Earth First) and those who promote the "wise use" of natural resources (Resources for the Future, U.S. Forest Service).[12] The conflicting views of Muir and Pinchot are also embodied in McHarg's words and deeds: when he calls humans "a planetary disease," he speaks as Muir; when he proposes that natural resources be used wisely for human benefit, he sounds like Pinchot. In 1969, McHarg saw that "clearly there is a desperate need for professionals who are conservationists by instinct, but who care not only to preserve but to create and manage."[13] The conflict between preservation and change is McHarg's most persistent inconsistency, and it highlights the contradictory position of landscape architecture as a profession. As agents of change, landscape architects are inevitably entangled in this conflict.

Pedagogical and Professional Practice: Ideas in Action

For environmentalism, McHarg, and landscape architecture, 1962 was an important year. Rachel Carson published *Silent Spring;* McHarg taught a studio course with an ecologist for the first time, hired a forester as a full-time faculty member, and founded the firm Wallace McHarg with his colleague, architect and planner David Wallace. From 1962, environmentalism was fully integrated into McHarg's teaching and professional work, and he emerged as a leader who played an increasingly important role in shaping national environmental policy.

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[9] Lewis Mumford, *Sketches from Life: The Autobiography of Lewis Mumford, the Early Years* (Boston: Beacon Press, 1982), 150–51.

[10] McHarg says he was first introduced to the work of Geddes in 1951–53, but that he did not study it (*Quest for Life,* 112, 380). Nevertheless, Geddes's ideas were in the air, as evidenced by the reprinting of *Cities in Evolution* in 1949. Mumford, whom McHarg acknowledges as a mentor, was greatly influenced by Geddes. Mumford named his son "Geddes" and calls Geddes "The Master" in *Sketches from Life,* 152.

[11] McHarg ignored precedent when he asserted, as he has many times, "I invented ecological planning in the 1960s" ("Ecology and Design," in *Quest for Life.*) The importance of McHarg's contributions is not diminished when seen in the context of work by others such as Phil Lewis, Angus Hills, and Arthur Glickson, who pursued similar ideas from the 1950s and early 1960s, not to mention many prior figures, such as Patrick Geddes and Warren Manning. This tradition was not acknowledged in the Department of Landscape Architecture and Regional Planning at the University of Pennsylvania when I was a student there in the early 1970s, nor did we draw from it in our work at Wallace McHarg Roberts and Todd during that period. Though both department and firm made numerous innovations, there were also many reinventions.

[12] See Anne Whiston Spirn, "Constructing Nature: The Legacy of Frederick Law Olmsted," in *Uncommon Ground,* ed. William Cronon (New York: W. W. Norton, 1995).

[13] Ian McHarg, *Design with Nature* (Garden City, N.Y.: Natural History Press, 1969), 151.

McHarg used his position at the University of Pennsylvania to develop ideas about environmentalism and landscape architecture through the speakers he invited, the faculty he hired, and the courses he taught. He tested and revised these ideas in practice, applying them to projects for specific clients in particular places. By 1969, the year McHarg published *Design with Nature,* Penn's Department of Landscape Architecture was among the leading programs in the world, much as his professional office, Wallace McHarg Roberts and Todd (WMRT), was among the foremost firms of landscape planning. From 1962 until his break in 1979 with David Wallace, William Roberts, and Thomas Todd, the ideas and methods of McHarg and his colleagues at Penn and WMRT evolved in a dynamic dialogue between theory and practice. The university studio was a place of theoretical experiment; the professional office, a place to test ideas in actual places, with real clients and programs.

McHarg taught his course Man and Environment throughout the 1960s and 1970s. "It permitted me," he says, "to invite the most distinguished speakers in the environmental movement for the illumination of students and the development of my knowledge."[14] The course consisted of thirty-six lectures: McHarg gave six, and the remaining were given by colleagues at Penn, like Mumford and Loren Eiseley, along with visitors from all over the country, including the anthropologist Margaret Mead and the biologists René Dubos and George Wald. Carol Franklin, a partner in Andropogon Associates and an adjunct professor at Penn, recalls that when she took the course in 1963, eight of the lecturers were Nobel Prize winners.[15] Most speakers were invited back year after year; they, in turn, invited McHarg to speak at their own institutions and to publish essays in books and journals that they edited. In 1960–61, he hosted a television series, "The House We Live In," organized for CBS in Philadelphia, which was based upon his Man and Environment course and featured some of its speakers. The course and the television series permitted McHarg to develop the philosophical and scientific ideas for his book *Design with Nature* and prepared the ground for its reception outside the profession of landscape architecture. Among the most influential ideas on his teaching, practice, and writing were the notions of nature as process, of places as products of physical and biological evolution, of adaptation and fit (René Dubos), and of man as a planetary disease (Loren Eiseley).[16]

Studio courses applied these ideas to landscape architecture. McHarg, with his colleagues and students, devised the methods for an approach he called "ecological planning and design" that was taught, used, and refined in studio courses and adapted to diverse projects in the office. This approach emerged gradually, evolving with new refinements each year. To his first class in the newly reinstated Department of Landscape Architecture, in 1956, he posed a study of Cape Hatteras. The students' report explained processes of beach formation and erosion, the development of plant communities, and the relationships of animal communities to their habitat. Although the studio did not produce a specific plan or design, it was an embryonic first step toward ecological planning at Penn.[17] In 1959, Lewis Clarke, an Englishman, was hired to teach "the first ecological design studio" at Penn on Levittown.[18] Three years later, McHarg taught a planning studio for Harvey Cedars, a second-home development along the New Jersey shore, in which students studied natural processes and landscape form. William Martin, an ecologist, also worked with the studio, which provided the material for "Sea and Survival," the second chapter in *Design with Nature.* When Nicholas Muhlenberg joined the faculty in 1962, he introduced new ideas and authors into the curriculum. E. Lucy Braun's *The Deciduous Forests of Eastern North America,* for example, became an influential text. After Muhlenberg's arrival, the biome, the physiographic region, and the river basin provided an indispensable context for the curriculum at Penn. These remained the powerful, integrative core of Penn's landscape architecture curriculum for thirty years, thereby tying the teaching of landscape architecture theory, method, and practice to three key concepts of geography and environmental science and management.[19]

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[14] McHarg, *Quest for Life,* 157.

[15] Carol Franklin, personal communication with author, 1998.

[16] Ian L. McHarg, "An Ecological Method for Landscape Architecture," *Landscape Architecture* 57 (January 1967): 105–7.

By 1962, McHarg was ready to try these ideas out with real clients on a real project. Wallace McHarg's first project was the "Plan for the Valleys," seventy square miles of valley farmlands and forested uplands north of Baltimore, Maryland. The region was in the path of an expressway that would bring new suburban development, and the wealthy residents had asked David Wallace to help them preserve the scenic beauty and environmental quality of the area. The firm based its proposals on an analysis of the region's natural resources and hazards, organized by its physiography, or what McHarg termed "physiographic determinism."[20] It recommended that new development take place on open plateaus and that wooded slopes and open valleys be preserved. In "Plan for the Valleys," McHarg stated the credo that would guide his work for the firm throughout the next seventeen years:

> The area is beautiful and vulnerable; development is inevitable and must be accommodated; uncontrolled growth is inevitably destructive; development must conform to regional goals; observance of conservation principles can avert destruction and ensure enhancement; the area can absorb all prospective growth without despoliation; planned growth is more desirable and as profitable as uncon-

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[17] G. M. Cope et al., "Plan for Cape Hatteras" (Philadelphia, University of Pennsylvania, 1956). McHarg himself does not cite this project and describes a 1961 course by Lewis Clarke and a studio by himself in 1962 as the first ecological design and planning studios at Penn (*Quest for Life,* 167–70). I am grateful to Meto Vroom for telling me about this studio and for giving me a copy of the report.

[18] Michael Hough and Tony Walmsley were among the students in the Clarke studio.

[19] Unfortunately this tradition of biome, physiographic region, and river basin as principal integrative concepts ended with a revision in the curriculum at Penn in 1993.

[20] McHarg, *Design with Nature,* 81.

> trolled growth; public and private powers can be joined in partnership in a process to realize the plan.[21]

McHarg the practitioner is, like Pinchot, a persuasive pragmatist. Practice has a creative role in refining and even generating theory, and practice is shaped by the types of projects for which clients seek professional advice, which is, in turn, influenced by socioeconomic, political, and cultural contexts. In the 1960s, McHarg's practice was shaped by the construction of the federal highway system and its effects on rural areas in metropolitan regions. After the New Communities Act of 1968, it was influenced by federal subsidies for new, planned communities. In the early 1970s, his clients were mainly private developers of new communities and resorts. By the mid seventies, after the energy crisis of 1973 and the economic recession of 1974, most of his clients were public agencies seeking to control and direct growth taking place in their region or to address environmental quality issues related to federal legislation. Managing the environmental consequences of suburban and exurban growth constituted most of McHarg's professional work from the time of his plan for the valleys in 1962.

In 1965, Secretary of the Interior Stewart Udall appointed McHarg to a task force of the American Institute of Architects on the Potomac River basin, and McHarg decided to use his studio courses at Penn to generate information, explore issues, and assume leadership of the task force. In *Design with Nature,* he presented a summary of work produced by students over the course of the year (1965–66), distilled from "five hundred maps and several pounds of reports."[22] In contrast to practice, the university offered McHarg the opportunity to frame problems, pose questions, and select sites. In 1969, he observed, "A professional landscape architect or city planner is limited in the projects he undertakes to problems presented by his clients. A professor, in contrast, suffers no such constraints and is enabled to undertake projects he deems worthy of study."[23]

The Potomac River Basin Study was a seminal project. It used most of the methods that were later refined in professional and academic projects of the late 1960s and the 1970s, including the overlay and the matrix (Figs. 5 and 6). It was also the first study to combine the physiographic region and the river basin as the primary organizing context for ecological planning and design—a framework that linked past, present, and anticipated future actions and multiple landscape scales from garden to region. Bird's-eye views and sections of the diverse physiographic regions within the river basin (the Allegheny plateau; Ridge and Valley; Great Valley; Piedmont; and Coastal Plain) summarized patterns of topography, geology, soils, hydrology, vegetation, current land use, and potential uses deemed suitable for particular locations. These drawings invite comparison of patterns from region to region within the river basin; they bear striking resemblance to Geddes's "valley section" of 1911.[24]

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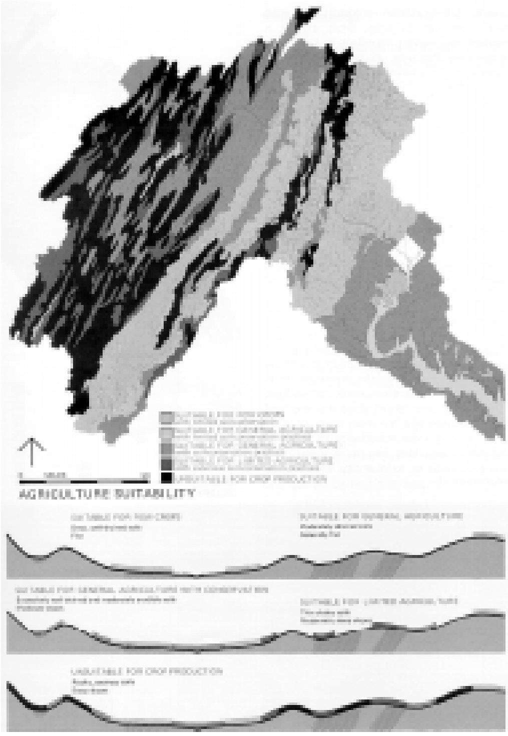
[21] Wallace McHarg, "Plan for the Valleys," quoted in McHarg, *Design with Nature*, 82.

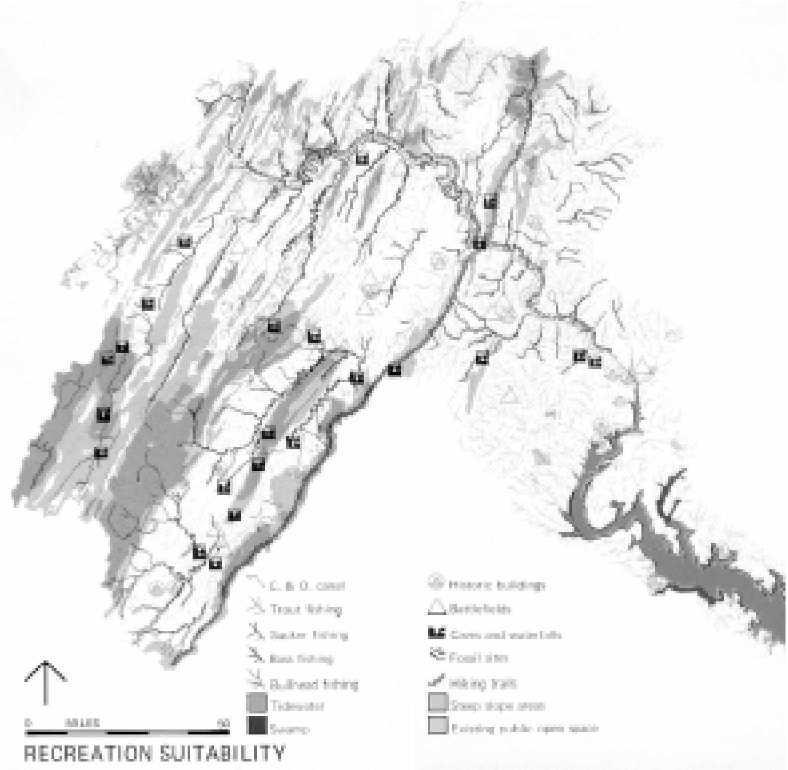
[22] McHarg, *Design with Nature,* 151.

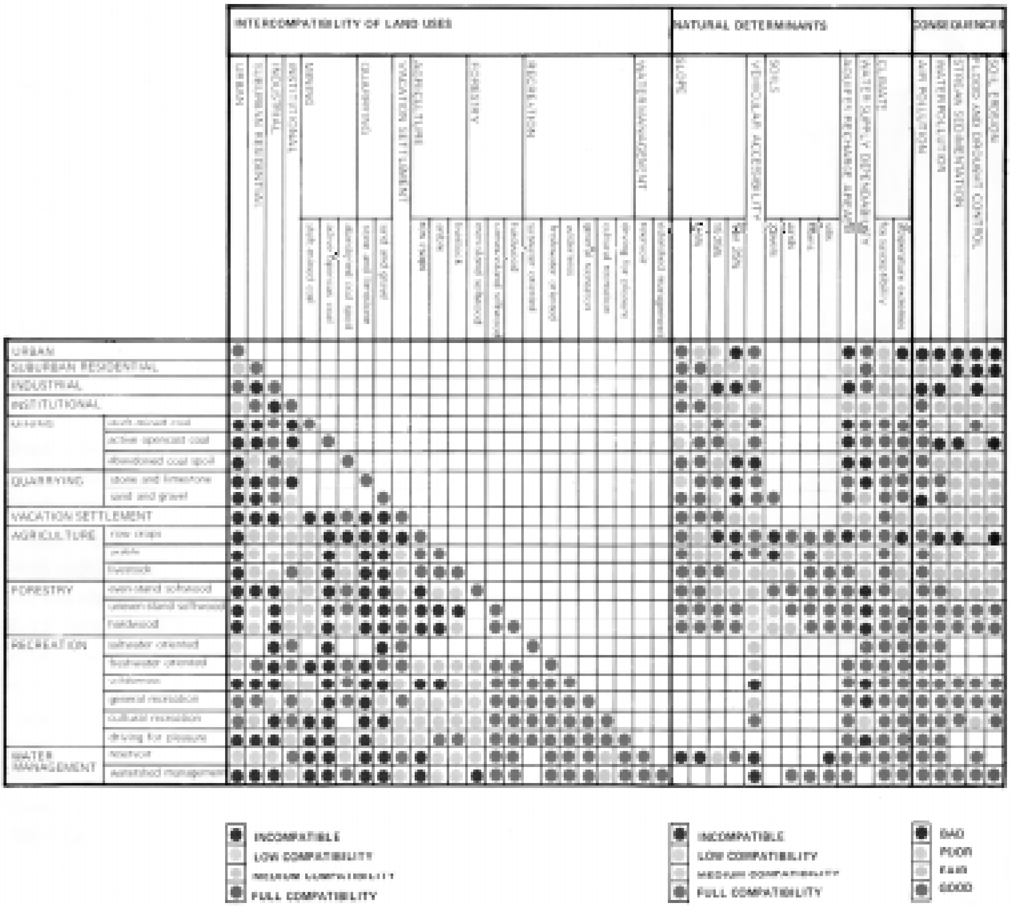
[23] Ibid., 127.

[24] See Patrick Geddes, *Cities in Evolution,* ed. J. Tyrwhitt (London: Williams and Norgate, 1949). The whole project is an exemplary application of Geddes's idea that city and region are an organic whole.


SUITABLE FOR ROW CROPS
SUITABLE FOR GENERAL AGRICULTURE
SUITABLE FOR GENERAL AGRICULTURE
SUITABLE FOR LIMITED AGRICULTURE
UNSUITABLE FOR CROP PRODUCTION
0 MILES 50
AGRICULTURE SUITABILITY
SUITABLE FOR ROW CROPS
SUITABLE FOR GENERAL AGRICULTURE
SUITABLE FOR GENERAL AGRICULTURE WITH CONSERVATION
SUITABLE FOR LIMITED AGRICULTURE
UNSUITABLE FOR CROP PRODUCTION

5. Overlays of factors to reveal spatial patterns of "intrinsic suitabilities" for diverse land uses, Potomac River Basin Study of 1965–66, reproduced in Design with Nature.




INTERCOMPATIBILITY OF LAND USES
NATURAL DETERMINANTS
CONSEQUENCES
URBAN
SUBURBAN RESIDENTIAL
INDUSTRIAL
INSTITUTIONAL
MINING
QUARRYING
VACATION SETTLEMENT
AGRICULTURE
FORESTRY
RECREATION
WATER MANAGEMENT
SLOPE
VEHICULAR ACCESSIBILITY
SOILS
WATER SUPPLY DEPENDABILITY
CLIMATE
AIR POLLUTION
WATER POLLUTION
STREAM SEDIMENTATION
FLOODS AND DROUGHT CONTROL
SOIL EROSION
INCOMPATIBLE
LOW COMPATIBILITY
MEDIUM COMPATIBILITY
FULL COMPATIBILITY
INCOMPATIBLE
LOW COMPATIBILITY
MEDIUM COMPATIBILITY
FULL COMPATIBILITY
BAD
POOR
FAIR
GOOD

6. This matrix, which was employed to produce "suitability" maps, shows compatibility among diverse land uses and various "natural determinants" and records the planners' assessment of potential conflicts and their consequences. Potomac River Basin Study of 1965–66, reproduced in Design with Nature.

The students conducted a comprehensive survey of the river basin, which McHarg termed "the ecological inventory" and his students later came to call "the layer cake" or "the litany." It was always the same list, in the same order (climate, geology, hydrology, soils, vegetation, and wildlife), sometimes further elaborated by field. In 1967, he described the reasons for this ordering:

> Written on the place and upon its inhabitants lies mute all physical, biological and cultural history awaiting to be understood by those who can read it. This is the prerequisite for intelligent intervention and adaptation. So let us begin at the beginning. The place, any place, can only be understood through its physical evolution. Both climate and geology can be invoked to interpret physiography, the current configuration of the place. If one now knows historical geology, climate, and

> physiography, then the water regimen becomes comprehensible—the pattern of rivers and aquifers, their physical properties and relative abundance, oscillation between flood and drought. Knowing the foregoing and the prior history of plant evolution, we can now comprehend the nature and pattern of soils. . . . By identifying physiographic, climatic zones and soils, we can perceive order and predictability in the distribution of constituent plant communities. Animals are fundamentally plant related so that given the preceding information, with the addition of the stage of succession of the plant communities and their age, it is possible both to understand and to predict the species, abundance or scarcity of wild animal populations.[25]

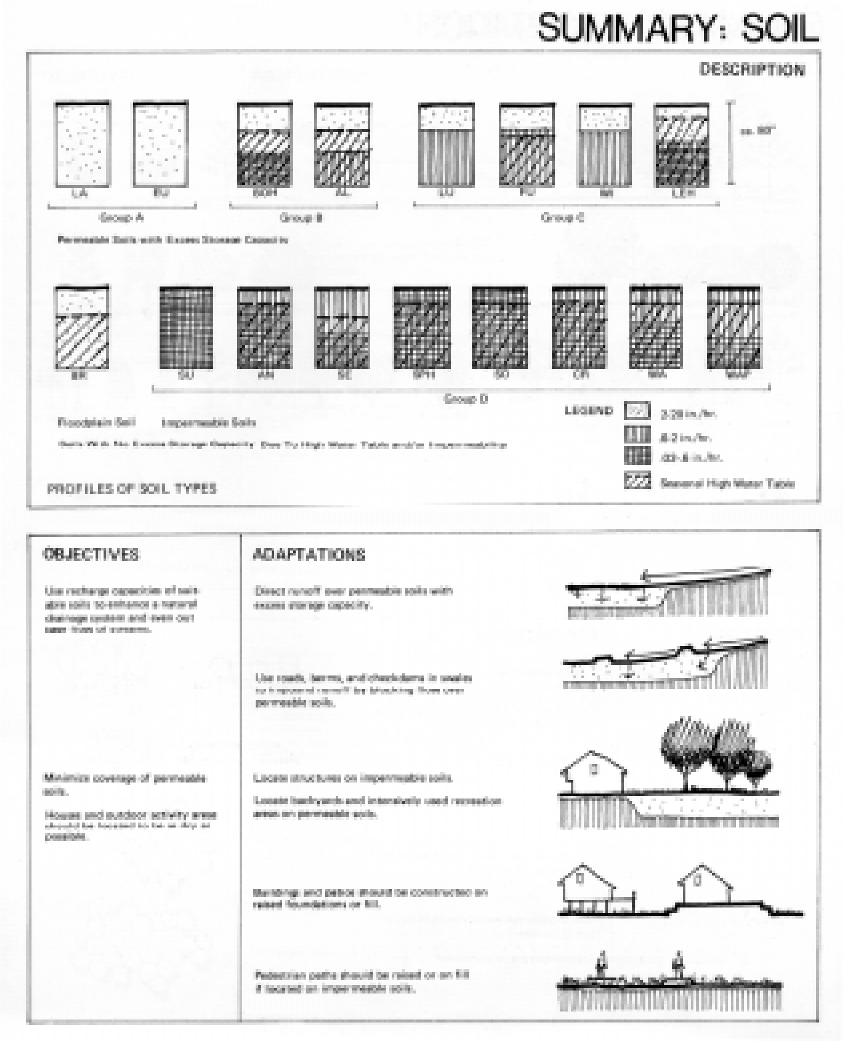
The inventory McHarg advocated and insisted upon in his teaching and professional projects "as a prerequisite for intelligent intervention and adaptation" has been attacked by some landscape architects for according too much weight to the insights of science as opposed to intuition. Others have criticized, even ridiculed, it for being unnecessarily comprehensive and too elaborate and expensive to undertake in most professional projects.[26] While these critics have a point, they lose sight of the most important aspects of the ecological inventory—its systematic comprehensiveness and the relation of different aspects of the environment. Such an inventory, applied consistently, is like the use of diagnostic gamuts in medicine, whereby the doctor is reminded, in examining patients and considering their symptoms, to check all their systems. The ecological inventory is also a diagnostic tool, a checklist of interrelated systems. In McHarg's practice, the inventory was adapted to the particular situation. It was used not only to understand how a place came to be, but also to identify problems and opportunities that might otherwise be missed and to focus not merely on what a landscape looks like but also how it functions and how it is evolving. In many instances, McHarg's systematic inventory of natural features and processes revealed important issues of which the client was unaware.

An ecological inventory by McHarg's firm, WMRT, for the site of Woodlands New Community, north of Houston, Texas, in the early 1970s, identified flooding, storm drainage, and groundwater recharge as overriding issues. The client wanted to build a new town in the midst of a pine and oak forest, but the site's soil and groundwater conditions were such that a conventional drainage system would have lowered the water table and destroyed the forest. It would also have caused flooding downstream and led to ground subsidence beneath Houston. These regional effects, in particular, would not have been identified with a less comprehensive approach to studying the site. McHarg and the staff at WMRT proposed a "natural drainage system" that would enhance groundwater recharge, abate flooding, protect water quality, and sustain the forest.[27] This innovative solution emerged from

[25] McHarg, "An Ecological Method for Landscape Architecture," 105–7.

[26] Carl Steinitz, in the course he taught at Harvard in the late 1970s and early 1980s, Methods in Landscape Architecture, often presented the most excessively detailed of McHarg's inventories for this criticism.

[27] See Ian McHarg and Jonathon Sutton, "Ecological Plumbing for the Texas Coastal Plain," *Landscape Architecture* 65, no. 1 (January 1975): 78–89; Anne Whiston Spirn, *Woodlands New Community: Guidelines for Site Planning* (Philadelphia: Wallace McHarg Roberts and Todd, 1973).


SUMMARY: SOIL
DESCRIPTION
Group A
Group B
Group C
Group D
Floodplain Soil
Impermeable Soils
LEGEND
Seasonal High Water Table
PROFILES OF SOIL TYPES
OBJECTIVES
ADAPTATIONS
Direct runoff over permeable soils with excess storage capacity.
Minimize coverage of permeable soils.
Locate structures on impermeable soils.
Locate backyards and intensively used recreation areas on permeable soils.
Buildings and patios should be constructed on raised foundations or fill.
Pedestrian paths should be raised or on fill if located on impermeable soils.

7. *Design recommendations linking goals and implementation were termed "adaptive strategies." (from Anne Whiston Spirn,* Woodlands New Community: Guidelines for Site Planning *[Philadelphia: Wallace McHarg Roberts and Todd, 1973])*

the situation of practice—the environmental challenges posed by the site, the pragmatic demands imposed by the client, and the values, theories, and methods of the landscape architects.

The plan for Woodlands provided the opportunity to link analysis and practice, planning and design, regional and local scales: to work from an ecological inventory of the eighteen-thousand-acre site, to a plan for the new town for 150,000 people, to devising strategies for its implementation in design (Fig. 7). Woodlands exemplifies McHarg's idea that planning and design are a tool of human evolution; WMRT staff invoke the language of evolution (e.g., "fit" and "adaptation") deliberately. Design recommendations linking goals and implementation took the form of "adaptive strategies."[28] Much to the frustration of McHarg and his partners, the firm was not hired to produce ecological designs for individual developments within the new town. Though many aspects of the plan were innovative, and though the new community seems to have been a financial success, in many respects the design of the new community failed both aesthetically and environmentally. Plans alone do not ensure that goals are achieved, as they may be subverted by inconsistent landscape design and management.

By the early 1970s, McHarg was widely recognized as a successful ecological planner, but, as at Woodlands, he had been unable to expand his practice from the domain of planning into that of design. Clients tend to hire professionals who have successfully completed commissions similar to the one they are contemplating; thus McHarg continued to attract challenging environmental planning projects but, with one exception, failed to gain design commissions. Perhaps it was this frustration at the lack of opportunity to implement ideas in built form that prompted McHarg to champion and persist with a project in Iran despite his partners' misgivings and objections.

Pardisan was to be an environmental park outside Tehran—a botanical garden, zoo, and cultural history museum, all in one, in a very arid region. It was both professionally risky, given the turbulent political conditions in the Middle East, and open to intellectual challenge, given its apparent contradictions in relation to McHarg's own work. After the oil embargo of 1973 and OPEC's oil price hike in 1975 provided many OPEC countries with ample income and slowed the American economy, particularly new construction, many American architectural and planning offices started working for Middle Eastern clients. McHarg's partners were reluctant to undertake such projects and the financial commitments to open offices abroad that they entailed. In order to proceed, McHarg agreed to be personally responsible for the financial risk.

WMRT had produced a feasibility study for Pardisan in 1973 and published a master plan in 1975.[29] The client for the project was Iran's Department of Education; the park's theme was to illustrate the idea of evolution. The proposal was to exhibit all types of the worlds' biomes—from tundra to tropical forest—with their diversity across continents, as expressions of adaptive responses on the part of plants and animals (both species and communities) and human cultures to environmental conditions (Fig. 8). The exhibits would consist of animals and plant communities displayed as one would encounter them in their native habitat, with many examples of the same species. Though it is now common to have zoo exhibits of animals in habitats much like their native habitat and in social groups akin in size to those they might inhabit in the wild,[30] this was not so in the mid-1970s. The plan for Pardisan broke new ground.

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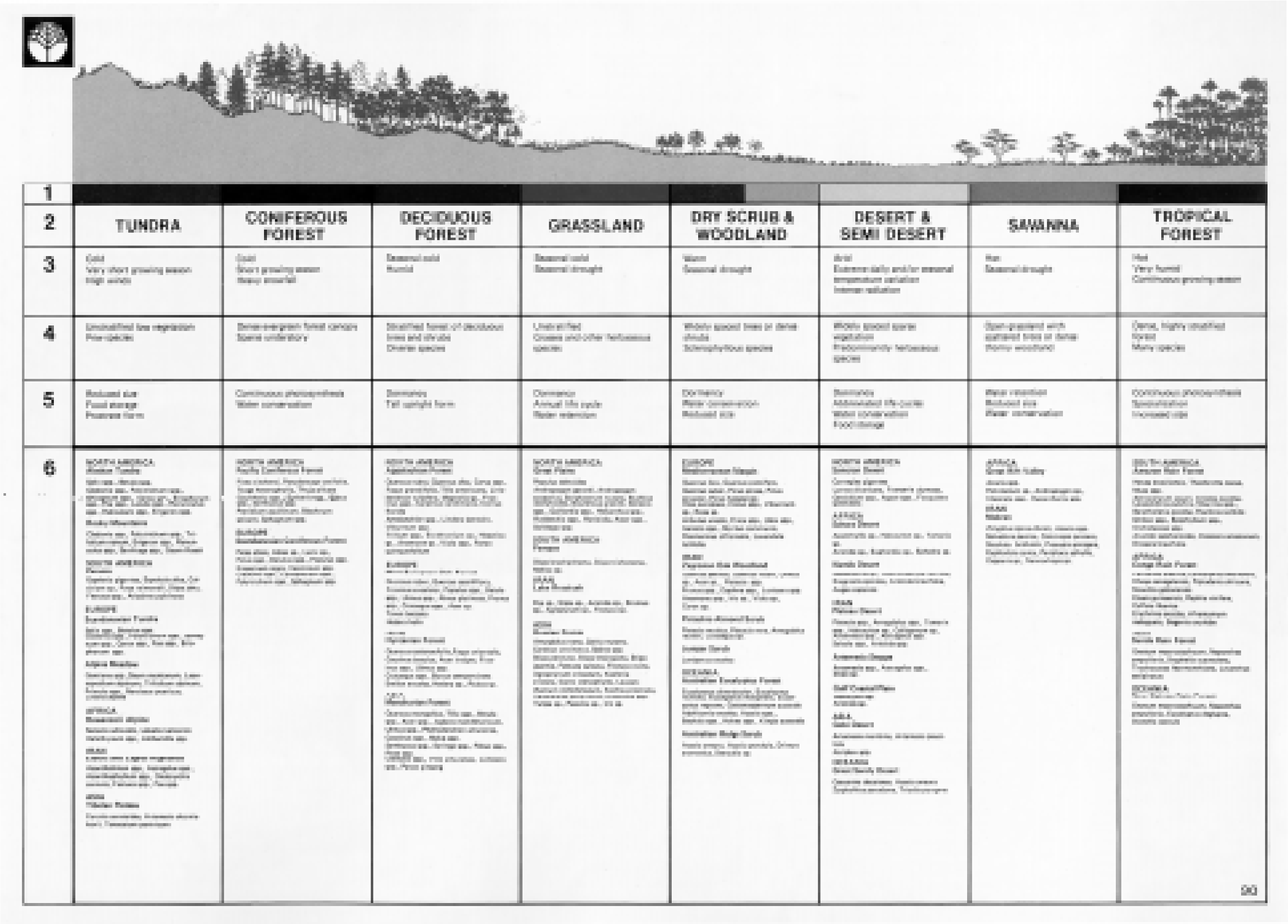
[28] In 1970–71 Robert Hanna taught Form, a drawing course that emphasized the adaptive fit between form and natural and cultural processes. Anthropologists Yehudi Cohen and Setha Low, who taught landscape architects at Penn, were also influential. Cohen wrote about cultural processes as environmental adaptation, and Low led students and faculty to consider the relationship between the environment and human health.

[29] *Pardisan* (Philadelphia: Wallace McHarg Roberts and Todd, 1975).

[30] San Diego Zoo's wild animal park and the Arizona-Sonoran Desert Museum were models.



8. *Program for vegetation exhibits at Pardisan, organized by bio-climatic zone (2) and showing, for each, 1) relative water demand; 3) description of zone; 4) characteristics of plant community; 5) major adaptive strategies; 6) the vegetation exhibits and their constituent species. Programs for the exhibits of animals and human cultures are developed and presented in a similar, parallel format, which highlights environmental stresses, adaptive strategies, and the relationships among plant, animal, and human communities. (from* Pardisan *[Philadelphia: Wallace McHarg Roberts and Todd, 1975])*

But innovation could not conceal a larger issue: however ambitious the project's scope and didactic goals, it was, in many ways, ecologically and socially perverse. All but some of the desert exhibits required irrigation, and the boreal and tropical forests needed to be in huge greenhouses, the boreal forest in an air-conditioned one. The human inhabitants of the park—those who were to live in the cultural exhibits and those who were visitors—raised further ethical and political issues. While Pardisan may have been *about* ecology, it certainly seemed at odds with McHarg's earlier work in ecological planning. Work on the design for Pardisan intensified in 1977 when Wallace McHarg Roberts and Todd opened an office in Tehran. After the Shah of Iran fell in 1979, the Pardisan project was halted, and the office in Tehran was closed. The firm had incurred substantial debts and was unable to collect unpaid fees from the new government. McHarg was forced to resign. "When I lost my office," he said recently, "ecological planning lost one of its greatest practitioners."[31]

Critical Reaction and Legacy

For eighteen years, the creative tension between theory as developed at Penn and practice as pursued at McHarg's firm led to innovations in method. When McHarg's practice ended, his ideas and methods, as he articulated them, ossified. But the issues they raise and the challenges they pose are part of his legacy, and they continue to be worked out by others. Can science be the sole, or even the principal, source of authority for landscape design? Are natural and vernacular landscapes the sole standard of beauty? What *is* ecological design? What are its methods and historical precedents? And what about the city? What could urban ecological design be? These questions have been answered variously and still provoke debate, argued in verbal texts and in built projects and speculative proposals.[32]

In the 1960s and 1970s, McHarg's charismatic personality and polemical language captured the attention of the profession and public and persuaded a large following to accept ideas that had also been explored by others. Years later, many innovations once seen as radical are now common practice. The legacy of polemics has a less positive side, however.[33] The claim that science is the *only* defensible authority for landscape design has provoked equally dogmatic reactions from those who see landscape architecture as an art form.[34] When McHarg calls ecology "not only an explanation, but also a command," he conflates ecology as a science (a way of describing the world), ecology as a cause (a mandate for moral action), and ecology as an aesthetic (a norm for beauty). It is important to distinguish the insights ecology yields as a description of the world, on the one hand, from how these insights have served as a source of prescriptive principles and aesthetic values, on the other.

McHarg emphasized invention over precedent. For the most part, the curriculum in landscape architecture at Penn from the 1960s through the 1970s was ahistorical, offering no introduction to, or comparison among, alternative approaches to landscape design and planning.[35] McHarg's claim to have invented the overlay method provoked Carl Steinitz, Paul Parker, and Lawrie Jordan to research the use of overlays as a planning method in the twentieth century, an original contribution to the literature, as was Steinitz's earlier comparative study of McHarg, Phil Lewis, and Angus Hill.[36]

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[31] McHarg, personal communication, 1998. When Narendra Juneja died a few years later, McHarg also lost his closest colleague in practice and teaching.

[32] Anne Whiston Spirn, "The Authority of Nature." See also George Thompson and Frederick Steiner, eds., *Ecological Design and Planning* (New York: John Wiley, 1997).

[33] I have discussed this at greater length in Spirn, "The Authority of Nature." This paragraph summarizes some points made in that essay.

[34] Provoked by such statements, many proponents of a new artistic thrust in landscape architecture chose to set this movement in opposition to "the ecological movement and its detrimental consequences for design." One article included gratuitous, unfounded attacks, some from critics who chose to remain anonymous, such as, "The so-called Penn School led by McHarg produced a generation of landscape graduates who did not build." Daralice Boles, "The New American Landscape," *Progressive Architecture* (July 1989): 53. Statements such as these were retracted by the editors in a subsequent issue of the journal in response to letters to the editor.

"But, you say, all this may be very fine but landscape architects are finally designers—when will you speak to ecology and design?"[37] Thus McHarg acknowledged, in 1967, the question repeatedly posed to him by his students. By the mid-1970s, ecological design was an integral part of the landscape architecture curriculum at Penn, but, despite a few cases and persistent efforts to secure commissions, it was not practiced in the office. Much of the impetus for exploring ecological design came from McHarg's students, and some produced work that influenced projects at his firm, such as the investigation of stormwater management and design by Toby Tourbier and Richard Westmacott in the late 1960s, which inspired design solutions at Woodlands. Michael Hough's book of 1985, *City Form and Natural Process,* and my own of 1984, *The Granite Garden: Urban Nature and Human Design,* brought together ecological planning and design. Both were sympathetic to McHarg's approach but critical of his pessimism toward and neglect of cities.

The Landscape Development Plan for the University of Pennsylvania in 1977, an exploration of ecological design in the context of an urban campus, is a good example of a project informed by McHarg's teachings and carried out by his former students and colleagues. Peter Shepheard, Laurie Olin, Robert Hanna, Narendra Juneja, Carol Franklin, and Leslie Sauer, all faculty of Penn's Department of Landscape Architecture and Regional Planning, worked together with Colin Franklin and Rolf Sauer. Conceived as an instrument of growth and change, the plan gave priority to the history and identity of the campus, the university's prospective growth, and the needs of its inhabitants, human and nonhuman.[38] Carol and Colin Franklin, Leslie Sauer, and Narendra Juneja had all worked on Pardisan at WMRT. The last three were also responsible for most of the conceptual work on Woodlands, and in certain respects, the Penn plan represented the implementation of adaptive design strategies they developed for Woodlands.

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[35] Anthony Walmsley taught two courses in the history of landscape architecture from the 1960s through the 1980s, but historical context was conspicuously absent from other courses, at least from the mid 1960s to the mid-1970s. Walmsley began to research the history of ecological design in the late 1980s.

[36] Carl Steinitz, Paul Parker, and Lawrie Jordan, "Hand-Drawn Overlays: Their History and Prospective Uses," *Landscape Architecture* 66 (September 1976): 444–55. The gap in Penn's history curriculum prompted me to trace precedents, track a genealogy of ideas and practices, and construct a pantheon of theorists and practitioners. This pantheon ranges from Hippocrates and Aristotle to Alberti and Leonardo; from John Evelyn and J. C. Loudon to Joseph Paxton, Frederick Law Olmsted, and Charles Eliot; from Frank Lloyd Wright to Kevin Lynch and Lawrence Halprin; and from Patrick Geddes to Lewis Mumford to Ian McHarg. See Spirn, "Urban Nature and Human Design"; eadem, "The Legacy of Frederick Law Olmsted"; eadem, "Architect of Landscape: Frank Lloyd Wright," in *Frank Lloyd Wright: Designs for an American Landscape,* ed. David De Long (New York: Harry N. Abrams, 1996); eadem, "The Authority of Nature."

[37] McHarg, "An Ecological Method for Landscape Architecture," 107.

[38] Peter Shepheard et al., *Landscape Development Plan: University of Pennsylvania* (Philadelphia: Center for Environmental Design, Graduate School of Fine Arts, 1977).

Members of this team went on to found two professional offices. Twenty years later, both firms are influential practices with international reputations. The Franklins and Sauers founded Andropogon Associates in 1974 to define ecological design through built work, as did Robert Hanna and Laurie Olin in 1976, when they founded Hanna/Olin. Though the goals and work of these two firms are distinctly different and may sometimes appear antithetical, both build upon McHarg's contributions and seek answers to issues unresolved in his ideas and projects—for example, how to reconcile environmental values and human needs, how to give material form to ecological processes and values, how to conceive of local actions within a regional context.[39]

McHarg's ideas—their success, failure, and promise—still inspire reactions from landscape architects, whether they see themselves as working within or against the tradition to which he has contributed so greatly. For three decades, he has provoked others to frame questions and pose answers concerning the relationship between landscape architecture and environmentalism. Landscape architects continue to address issues raised by McHarg's successes and failures, the goals and standards he set, and the inconsistencies embodied in his words and actions. It is difficult to imagine what landscape architecture would be like today without the presence of Ian McHarg, his publications, teaching, and professional projects.

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[39] See, for example, Carol Franklin, "Allowing the Land to Live," in *Ecological Design and Planning,* ed. George F. Thompson and Frederick R. Steiner (New York: John Wiley, 1997); Laurie Olin, "Regionalism and the Practice of Hanna/Olin, Ltd.," in *Regional Garden Design in the United States,* ed. Therese O'Malley and Marc Trieb (Washington, D.C.: Dumbarton Oaks, 1995).

Do Landscapes Learn? Ecology's "New Paradigm" and Design in Landscape Architecture

Robert E. Cook

For the past two decades, the field of ecology has been undergoing a quiet shift in the concepts and philosophy that shape ordinary theoretical and field investigations. The "new paradigm" that has emerged in this shift centers on an understanding of the natural world as a setting of dynamic change and uncertainty, placing the underlying assumptions that now support ecological research in marked contrast to the perspective that has influenced our understanding of the natural world over the last century.[1]

One may ask, what implications does this "new paradigm" have for disciplines with ecological applications, such as conservation, ecological restoration, and landscape architecture?[2] The value of this new perspective depends upon how ecological knowledge is used in practice. On the face of it, an understanding of ecology can assist landscape architects in their work in two obvious ways. A design project usually involves a serious intervention and rearrangement of the land, and a biological understanding of the consequences may help the architect predict and control the outcome of the intervention. Second, the narrative of ecology and the feelings an ecological perspective may provoke can serve as inspiration for the aesthetic challenge facing the designer.

There may also be a third value in understanding the work of ecologists and the implications of a shift in perspective: the designer may begin to see the conduct of ecological studies as an engagement with the land and its inhabitants, analogous to but philosophically distinct from landscape architecture. This third value may then serve to initiate a deeper dialogue between the ecologist and the designer.

What led to my own such engagement with the land as a practicing ecologist was a seemingly unremarkable population of wild violets growing in the woodlands of New

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[1] Daniel Simberloff, "A Succession of Paradigms in Ecology: Essentialism to Materialism to Probabilism," in *Conceptual Issues in Ecology,* ed. Esa Saarinen (Boston: D. Reidel, 1982), 63–99.

[2] Robert E. Cook, "Is Landscape Preservation an Oxymoron?" *George Wright Forum* 13, no. 1 (1996): 42–53; Stuart T. A. Pickett, Victor T. Parker, and Peggy L. Fiedler, "The New Paradigm in Ecology: Implications for Conservation Biology above the Species Level," in *Conservation Biology,* ed. Peggy L. Fiedler and Subohd K. Jain (New York: Chapman Hall, 1992), 66–88.

England. The question behind my research was simple: Why would female plants bother with sex when asexual reproduction is perfectly adequate? Female plants frequently reproduce without sex, leading to the cloning of identical individuals. I wanted to understand why, in an evolutionary sense, sex ever evolved.[3]

The chosen species of particular interest to me was a white-flowering, short-stemmed violet called *Viola blanda,* familiar to anyone who frequents the wetter parts of our New England woodlands. Every year in early May, it forms a rosette of leaves in the leaf litter of the forest floor. Out of the axil of its leaves, where the leaf stem, or petiole, meets the main stem, emerges a new shoot. It grows somewhat like a branch except that it remains just below the surface of the soil. This runner, or stolon, is leafless and grows through the summer to distances of twenty or more inches from the mother plant.

As the days of autumn grow shorter, extension growth ceases, and the tip of the stolon shoot turns up to barely emerge from the soil. It overwinters in this form, and the warming of the soil in April stimulates the emergence of leaves and the initiation of roots that will give this daughter plant independence from its mother. Throughout the following season, the daughter now repeats the cycle, forming one or more stolons that in turn create granddaughters and great-granddaughters, all at different locations across the forest floor (Fig. 1).

I studied the formation of these clones by marking seedlings and censusing each one repeatedly through the season and over a number of years. When the growth of any new stolons stopped each fall, I would mark the new locations of the potential daughter plants. If they survived winter and emerged the following spring, I would add them to my census population. In this way I could track the formation of clones and know the underground connections among the plants in my population.

Obviously, such a demographic approach to watching violets grow involved many, many hours spent on my knees tracking individual plants. Over the eight years of my research I encountered about eight thousand violets and discovered that any one individual lives a relatively short life, perhaps four or five years. Yet, this plant is replaced by her genetically identical daughters and granddaughters, although in different locations. In this sense, the plant is capable of surviving indefinitely through the asexual production of new generations.

There was, however, an entirely different interpretation one can place on this pattern of life and death. Because daughters and granddaughters are genetically identical to the mother plant, they are the same individual from an evolutionary point of view. The "adaptation" of the clone in the forest understory is its "movement" across the forest floor.

Understanding this spatial pattern required tracking the clone's temporal pattern of change over multiple years. The dynamic movement of the clone in space prompted a set of new questions about clonal behavior: was this movement random, or could it be directed, perhaps to locations of higher resources such as sunlight or mineral nutrients? Were the clones foraging for "food" over the forest floor?

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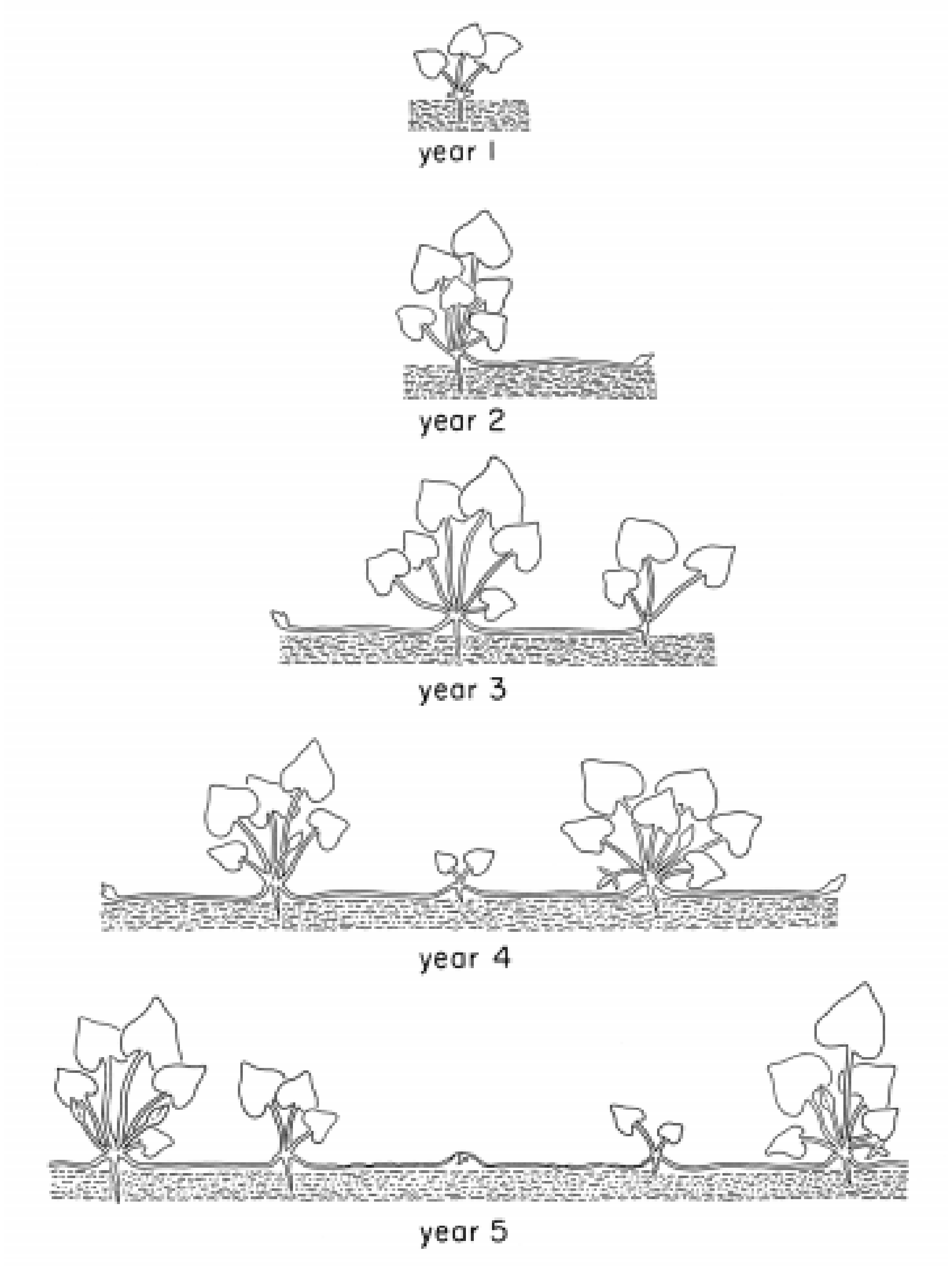
[3] Robert E. Cook, "Clonal Growth and Reproduction in Plants," *American Scientist* 71 (1983): 244–53.



1. Schematic sketch of the life cycle of a Viola blanda *plant showing the way in which the distribution of growth shifts to younger generations as the clone moves slowly across the forest floor, continually acquiring new locations.*

After 1983, my career turned away from the investigations that could answer such questions, but the perspective toward the natural world that they embraced—a dynamic, constantly changing nature—reflected the influence of the new paradigm that was then overtaking academic ecology. The significance of this influence is best conveyed through an understanding of the old paradigm and how it became established.

Ecological Theory

Ecology as a science really began as plant ecology before the turn of the century. Botanists were developing taxonomic schemes to describe and classify diverse plant communities. This included both different-looking communities with different plant species growing in different regions of the world and different-looking communities growing at different times in the same location. By the end of the nineteenth century, botanists understood that, for any one location, there was a recognizable sequence of plants that invaded a site following a severe disturbance, such as fire or land clearing for agriculture. The sequence of species that appeared in stages usually ended with a community composition similar to that found before the disturbance, a process called succession.

The intellectual father of ecology was Frederick E. Clements, a botanist who grew up in the grasslands and prairie regions of this country. His prolific writings over fifty years left an enduring imprint on the science of ecology, particularly the establishment of the old paradigm. Trained in floristic taxonomy characteristic of nineteenth-century botany, Clements believed that one could understand the proper classification of plant communities if one could understand how those communities came to occupy land rendered bare by disturbance. Clements brought a holistic perspective to his beliefs about vegetation that was consistent with much of the intellectual thought at the time. He argued that the plant community, the whole assemblage of species found growing together on a site, was actually a single living organism. As such, it displayed characteristics of development, integration, and homeostasis similar to an individual plant or animal. In 1905 he published his first ecological book called *Research Methods in Ecology,* which describes the plant community, then called a formation: "Vegetation an Organism" [*sic*]—The plant formation is "an organic unit." This unit, he writes, "exhibits activities or changes which result in development, structure, and reproduction. . . . According to this point of view, the formation is a complex organism, which possesses functions and structure, and passes through a cycle of development similar to that of the plant. . . . As an organism, the formation is undergoing constant change."[4]

Clements's concept of vegetation as a kind of "superorganism," propounded in numerous books and papers in the first half of this century, had an enormous appeal for many individuals entering the discipline of ecology as a subfield of botanical study. His theory became an alternative to the strongly reductionist tendencies seen in physiology and genetics, and its spiritual qualities reinforced the emotional feelings experienced by scientists who spent thousands of hours in the field investigating the natural world. Also at this time, the organism as a metaphor was influencing the intellectual development of disciplines well outside ecology.[5]

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[4] Frederick E. Clements, *Research Methods in Ecology* (Lincoln, Nebr.: University Publishing Company, 1905), 199.

During the old paradigm's long hold over the field of ecology in this country, one important transformation developed in the decade before the Second World War. The concept of the plant community was not only expanded to include all of its animal inhabitants, but also redescribed in terms of two fundamental processes that give life to the "super–organism"—the flow of energy through the community and the cycling of nonorganic elements such as hydrogen, oxygen, nitrogen, and carbon. The "superorganism" was transformed into the "system," now called an "ecosystem." Following the war, the science of ecosystem studies began to grow rapidly, and a new language describing the dynamics of energy and nutrients came to dominate the discipline of ecology.

Although describing a natural system in energetic terms might seem reductionist in nature, ecosystem ecology retained a strongly holistic interpretation: the healthy ecosystem is an integrated, efficiently functioning entity that can be defined, described, and measured quantitatively. Reference to the superorganism disappeared from the narratives of ecologists, but descriptions of functional properties drew on a language heavily characterized by organismic attributes. Ecosystems, ecologists now recognized, displayed homeostasis and self-regulation. When disturbed by outside forces, they exhibited a process of regeneration described as a predictable series of developmental stages that continued until a mature and healthy equilibrium was reached. The leading textbook of the time, *Fundamentals of Ecology* (1954) by Eugene Odum, contains a summary chapter, "The Strategy of Ecosystem Development," that states,

> Ecosystem development, or what is more often known as ecological succession…is an orderly process of community development [that] is reasonably directional and, therefore, predictable. . . . Succession is community-controlled. . . . It culminates in a stabilized ecosystem in which maximum biomass and symbiotic function between organisms are maintained per unit of available energy flow. . . . The development of ecosystems has many parallels in the developmental biology of organisms, and also in the development of human society.[6]

The influence of this holistic paradigm, also called the "equilibrium paradigm," went well beyond academic ecology, especially with the rise of environmentalism in the 1960s. Ian McHarg's *Design with Nature* (1969), the classic study that merged ecology and landscape planning, is suffused with a spiritual and holistic interpretation of the natural world. McHarg writes, "Ecologists describe the thin film of life covering the earth as the biosphere, the sum of all organisms and communities, acting as a single superorganism."[7]

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[5] Robert P. McIntosh, *The Background of Ecology: Concepts and Theory* (New York: Cambridge University Press, 1988), 383 ff.

[6] Eugene P. Odum, *Fundamentals of Ecology* (Philadelphia: Saunders, 1954), 251.

Four major elements characterize this equilibrium paradigm. First, ecological systems in their natural state are closed, self-regulating systems. Energy efficiently sustains the maximum state of biomass, and nutrients cycle within the system without significant loss. Second, the system in its most mature state is in a condition of balance or equilibrium. The forces of nature causing change (i.e., disturbance) are external to the system. Third, when the system is disturbed by outside forces and degraded to an earlier developmental, less efficient state, an ecological process known as succession changes the system through a sequence of predictable stages to restore the original conditions and return the system to an equilibrium condition. Finally, the activities of humans are not part of the natural world and are often in conflict with its operation. The influence of human culture is largely negative, acting as an agent of disturbance that undermines the balanced, stable equilibrium of the mature and healthy system.

The transition from one paradigm to another was brought about in the 1980s by several factors.[8] The first was the influence of evolutionary theory on ecology through its causal explanations, especially the mechanism of natural selection. New ecology textbooks began to appear in the 1970s that fully incorporated population genetics and population biology into ecological theory and practice. From this perspective, a community, or ecosystem, is a collection of populations, and the whole is not greater than the sum of the parts.

Along with a population approach to ecology came a statistical and probabilistic perspective for understanding complex natural phenomena. Ecologists increasingly recognized the large role that chance played in the way the natural world works. Finally, the accumulation of evidence from long-term, historically oriented studies of natural systems overwhelmingly indicated that nature was very unruly and seldom behaved in a way that was consistent with the ideal models and predictions of the old paradigm. Despite the tenacious, century-old hold of a holistic ecology over the minds of ecologists and its popularization for political and religious ends, the metaphor of the organism has been gradually replaced by the new paradigm.

If the older paradigm can be characterized by its equilibrium, the new paradigm emphasizes the dynamic and changing nature of communities and ecosystems.[9] These systems are no longer seen as closed, self-regulating entities, since their boundaries are much more complex and difficult to define than this would imply. Changes in the composition of a community can be greatly influenced by factors outside the system, further expanding the scope and complexity of the ecological knowledge required to understand its local dynamics.

Disturbance is a frequent, intrinsic characteristic of ecosystems. They are constantly subject to varying degrees of physical disruption from natural forces, and species exhibit a wide range of adaptations to disturbance. Fire, windstorm, landslide, flooding, and the mortality of plants and animals that result are all intrinsic elements of every natural setting, leaving most communities resembling a patchwork mosaic of species usually representing very different stages of succession.

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[7] Ian L. McHarg, *Design with Nature* (Garden City, N.Y.: Natural History Press, 1969), 47.

[8] Simberloff, "A Succession of Paradigms," 63–99.

[9] Pickett, Parker, and Fiedler, "The New Paradigm," 66–88.

Succession itself is now viewed as a highly probabilistic process that can be greatly influenced by local conditions and the particular order of events that occurs. In other words, what was formerly considered a highly predictable, universal process is actually highly contingent on history and context. Successions may display multiple pathways and multiple end states, if an end state is ever reached.

Finally, in the new paradigm humans can be and usually must be considered part of the system. This is a recognition of the overwhelming influence of human culture on all natural systems and the worldwide impact of certain cultural practices such as the burning of fossil fuel, the release of ozone-destroying chlorofluorocarbons, and the introduction of alien species. The new paradigm challenges any clean distinction between culture and nature.

Case Studies

The use of the word *paradigm,* whether old or new, implies a certain language used within a discipline, almost independent of the underlying concepts and assumptions. A detailed review of two case studies from the practice of ecology demonstrates this play between evidence, concepts, and language.

The first case is the classic example of succession that has been cited in many leading textbooks since it was first described in 1923.[10] At Glacier Bay, Alaska, the resident glacier has been melting and retreating north at a rate of about half a kilometer a year since 1750 (Fig. 2). The valley left in its wake filled with seawater to form Glacier Bay, and all along the shore the glacier has deposited till consisting of a variety of silty and sandy sediments containing pebbles, stones, and large rocks in a homogeneous outwash with no nutrient content.

Succession began when plants invaded the shoreline. An initial community of mosses and herbaceous species was followed by low-growing willows, cottonwoods, and alders. The alders soon spread into thickets, which were in turn invaded by sitka spruce. After a century, the spruce forest completely shaded out the lower-growing alders and was itself infiltrated by mountain and western hemlock. This mixed spruce-hemlock forest is considered to be the final, or climax, stage of succession, reached after a period of two hundred years.

Studies conducted after World War II revealed a parallel pattern of soil development.[11] Nitrogen-fixing herbaceous species and alders increased the nitrogen content of the soil, and the decomposition of acidic alder leaves lowered the initially high, alkaline condition

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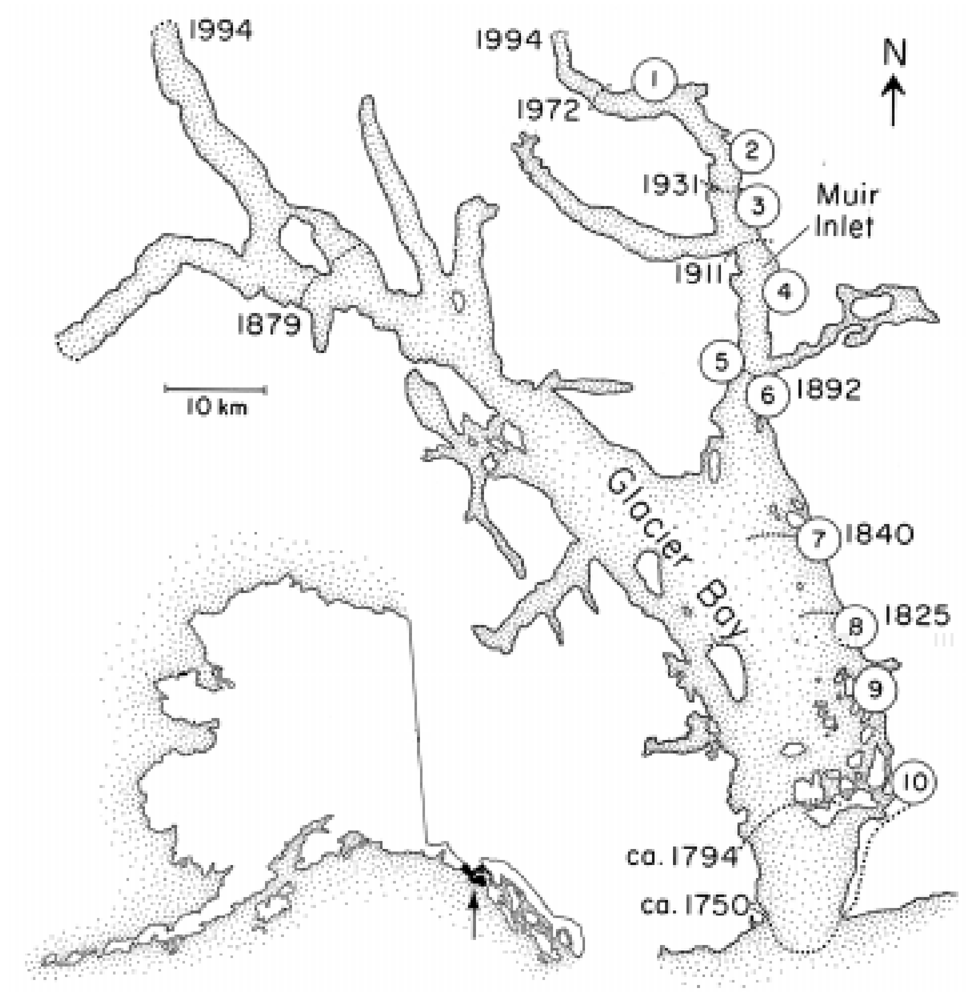
[10] William S. Cooper, "The Recent Ecological History of Glacier Bay, Alaska: The Interglacial Forests of Glacier Bay," *Ecology* 4 (1923): 93–128.

[11] Richard L. Crocker and John Major, "Soil Development in Relation to Vegetation and Surface Age at Glacier Bay, Alaska," *Journal of Ecology* 43 (1955): 427–48.



2. Location of ten study sites at Glacier Bay, including positions of glacier termini established from historical maps and photographs (1794 and 1879–1994) or from the measurement of tree cores (1750, 1825, 1840). Arrow indicates location of Glacier Bay National Park and Preserve in southeastern Alaska (redrawn after Christopher L. Fastie, "Causes and Ecosystem Consequences of Multiple Pathways of Primary Succession at Glacier Bay, Alaska," Ecology *76 [1995], 1900* of the glacial till. These changing conditions permitted the seedlings of spruce and hemlock to successfully colonize, and the increasing level of nitrogen accelerated tree growth and the accumulation of organic carbon in the soil.

This tidy narrative—a predictable sequence of plant species parallel with, and presumably caused by, a predictable sequence of soil development—exemplified primary succession until the present decade. Yet this process is not based on observations of a single site over a two-hundred-year period; obviously, no ecologist is that dedicated or long-lived. Instead, study plots were established at different distances south along the shoreline of Glacier Bay. Sites nearest the edge of the glacier were the youngest, and sites one hundred kilometers away at the mouth of the Bay were the oldest. This methodology assumes that the sequence of plant communities seen in space accurately describes the sequence of plant communities that will occur at one site over a two-hundred-year period; that is, spatial variation is presumed to mirror temporal variation.

Beginning in 1987, Christopher Fastie, a graduate student at the University of Alaska, decided to see if a historical reconstruction of single sites over time actually matched the description of the successional sequence of Glacier Bay as seen in the spatial comparison of multiple sites. To do this he took core samples out of all tree trunks growing at each of ten study areas in a sequence from north to south (see Fig. 2) and reconstructed the history of each tree's growth by measuring every annual growth ring under a microscope. The history of the site could then be reconstructed from a knowledge of the growth of its individual trees. In addition, he did a soil analysis at all ten study areas. Using meticulous statistical methods, he recreated the forest history at each site based on the direct evidence displayed by the wood of each tree.[12]

Fastie found that the actual history sometimes differed considerably from the classic successional narrative. The three oldest sites closest to the open sea displayed an invasion of spruce and hemlock much earlier than expected, and there was little evidence that alder thickets were ever a dominant part of the early forest history of these sites. The middle-aged sites were covered with alder thickets, which seemed to have greatly delayed the invasion of spruce and hemlock. At the very youngest sites, over sixty kilometers from the sea and closest to the glacier, cottonwood rather than alder was coming to dominate the earlier phases of vegetational change.

Thus Fastie identified three distinct patterns of succession at Glacier Bay, all within a comparatively short distance of each other. In addition, he noted that the oldest sites were under attack from the spruce bark beetle, which was killing all canopy spruce in some stands. This new disturbance may have been facilitated by declining tree vigor due to low nitrogen availability in the soil. Fastie speculates that spruce trees colonizing younger sites, where nitrogen-fixing alder thickets have previously been dominant, may have greater resistance to such insect outbreaks and may therefore experience a very different history as much as a century later. He concludes:

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[12] Christopher L. Fastie, "Causes and Ecosystem Consequences of Multiple Pathways of Primary Succession at Glacier Bay, Alaska," *Ecology* 76 (1995): 1899–1916. To give you a feel for the scale of Fastie's sampling plan, he set up 10 ten-by-fifteen-meter study plots at each of the ten study areas. He supplemented this with 35 additional plots as needed. Within each of these 135 plots, he counted and measured all seedlings and saplings by species, and he cored every tree. He even cored any dead trees in the plots to determine the time of germination and the time of death. Each tree was cored six times, and each core was sanded smooth and its growth rings measured to within 0.01 millimeter accuracy. I estimate that Fastie carefully looked at and measured ten thousand to twelve thousand tree cores.

> The existence of qualitatively distinct pathways at similar sites at Glacier Bay demonstrates that no single sequence of species replacements and no single mechanistic model of plant community change is mandatory. . . . Multiple pathways of compositional change at Glacier Bay appear to be a function of landscape context, which, in conjunction with . . . dispersal capabilities and generation time, affects seed rain to newly deglaciated surfaces and thereby alters the arrival sequence of species. . . . The single species differences early in succession at otherwise similar sites at Glacier Bay therefore could have substantial consequences for successional pathway and ecosystem function for many centuries.[13]

The second case is drawn from much closer to home. For more than eighty years, the Harvard Forest in Petersham, Massachusetts, has been a study site for the effects of catastrophic natural disturbance on forested landscapes. Established as part of a traditional forestry school after the turn of the century, large tracts of white pine and hemlock growing on its lands were severely damaged by the 1938 hurricane that destroyed forests throughout central New England. After the Second World War, the direction of research at Harvard shifted from questions of applied biology such as forest production to more basic issues involving the structure and functioning of natural ecosystems.

David Foster, director of the Harvard Forest, and his colleagues have conducted a series of studies that have revealed the role of natural disturbance in the temperate forests of the northeastern United States.[14] One small forest of particular interest in southwestern New Hampshire is the Pisgah Tract, which has never been cut for timber. This primeval forest today looks like many of the second-growth woodlands found throughout New England growing on abandoned farmland, except that on the forest floor, surrounded by sixty-year-old birch, maple, and oak trees, lie the fallen, decaying trunks of huge, one-hundred-foot white pine and hemlock trees that were once part of the old-growth forest. The trees were all blown down in four hours on 21 September 1938, and a new forest has grown up around them.

Through methods of historical reconstruction similar to those used by Fastie in Glacier Bay, Foster meticulously traced the history of this site back to 1635 when a powerful hurricane destroyed the forest and was followed, thirty years later, by widespread fire. Over the subsequent three hundred years, the site was subjected to seven damaging windstorms or hurricanes, six widespread fires, and three broadscale attacks by pathogens. This pattern of regular disturbance shaped the composition of the forest through the death of large trees and the recruitment of new seedlings. It was this patchwork plant community, dominated by large hemlocks and white pines, that was destroyed in 1938 and followed by a forest of a very different composition.

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[13] Fastie, "Causes and Ecosystem Consequences," 1913.

[14] David R. Foster, "Disturbance History, Community Organization and Vegetation Dynamics of the Old-Growth Pisgah Forest, Southwestern New Hampshire, U.S.A.," *Journal of Ecology* 76 (1988): 105–34.

Foster's interest in the functioning of the temperate forest ecosystem was not limited to an understanding of its past, however.[15] He wanted to discover how human cultural activities were affecting the forests. Over the past century, we have been increasing the concentration of carbon dioxide in the atmosphere by 30 percent, with every indication that this and future increases will lead to a worldwide rise in the average temperature of Earth's surface. In addition, the amount of nitrogen being introduced into natural systems worldwide has more than doubled and promises to continue increasing, creating a very large fertilization experiment with unknown consequences. While we ordinarily think of human disturbance to nature in terms of forest clearing and agricultural production, a much more global and chronic source of disturbance involves fundamental changes to biogeochemical cycles. How, Foster asked, do the responses of forests to these chronic disturbances compare to similar responses to catastrophic disturbance?

To find out, Foster set up a series of experimental plots in 1990. In one, he used a power-driven winch to pull over all the trees in one direction, thereby simulating the effects of a hurricane. In a second, he placed heating coils below the soil surface and raised the average temperature by five degrees centigrade. Finally, he fertilized a third plot with nitrogen monthly between May and October. He subsequently measured the plants' responses to these three experimental manipulations. Following each treatment, he also tracked changes in key nutrient processes in the water and soil of the forest.

While the experiment has only been running for six years, some preliminary conclusions are quite interesting. As one might expect, pulling over more than 250 mature trees in the middle of a forest caused immense structural damage, with an additional 400 trees more or less affected. In addition, the uplifted root systems created a series of huge holes in the forest floor, and the erosion of the soil clinging to roots formed mounds of soil beside these pits. The forest floor was covered with broken debris and litter.

Despite this bleak picture, regeneration of the forest began immediately. Snapped and fallen trees sprouted new shoots from branches and roots. Forty percent of the trees pulled over managed to survive and recover. New seedlings and saplings soon appeared and quickly grew in the open sunlight. Within four years a new canopy of young trees and survivors had formed.

Foster had anticipated that such chaotic disruption of the forest and soil structure would have a great impact on the water and nutrient processes that are critical to ecosystem functioning. But he found no evidence of any change. The movement of carbon and nitrogen was very similar in the hurricane simulation plots and the controls that experienced no disturbance.

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[15] David R. Foster, et al., "Forest Response to Disturbance and Anthropogenic Stress," *BioScience* 47 (1997): 437–45.

Such was not the case in the fertilizer and soil-warming experiments, however. These plots showed no changes in the structure and composition of the forest, at least not yet. While there was some increase in leaf litter production in the fertilizer experiment, the forests looked very similar in appearance to their controls. Despite this, measures of carbon and nitrogen cycling indicated major changes. Heating the soil greatly increased the release of carbon dioxide from the soil into the atmosphere and more than doubled the rate of nitrogen mineralization, a measure of nitrogen release in the soil. This implied a profoundly altered soil environment. Similarly, in the fertilizer experiment, the rate of nitrogen immobilization in the soil increased nearly 100 percent during the six years of the experiment without any effect on the rate of carbon dioxide release. Where this nitrogen is being stored remains a mystery.

Although he intends to continue monitoring these experiments for many years to come, Foster has made some initial conclusions:

> Whereas the blowdown site appears severely disturbed, internal processes have not been altered significantly, and the stand is on a path to recovery of structure and function in keeping with the cyclic pattern of disturbance and development of this forest type. By contrast, the chronic nitrogen and soil warming plots are visually intact and apparently healthy, yet the subtler measures of ecosystem function suggest serious imbalances, with possible future implications for community structure, internal ecosystem processes, and exchanges with the global environment.[16]

From these two ecological examples, the picture of the natural world that emerges is one of continual change—the flux of nature rather than the balance of nature. The pattern of this change is highly local and contingent on a particular sequence of historical events, and the effect can create a very heterogeneous spatial pattern on the land. The causes of the visible changes may be quite invisible, and the outcome of particular causes may be highly probabilistic; that is, chance can have a strong influence on change. Moreover, the pattern of change at one site may be complexly related to causes a great distance away or to large-scale processes with small, cumulative effects. Many of these causes are related to humans, who have come to dominate the natural world in the past century.

Ecology and Landscape Architecture

How can this picture of a contingent, fluctuating and dynamic nature be of any use to the practice of landscape architecture? Some answers begin to surface if we return to the framework of possibilities noted earlier—ecology as knowledge, ecology as inspiration, and ecology as a basis for a conceptual dialogue.

Most landscape architects, if given the choice, would prefer to design landscape interventions that maintain or improve the ecological health of the land—thus the term *sustainable design.* To this end, a deeper understanding of the workings of the natural world is helpful. The problem, of course, is knowing how any particular intervention affects the health of the land.

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[16] Foster et al., "Forest Response," 444.

Landscape architects seem to be at great odds over the role of ecology versus aesthetics in their work.[17] And the concern seems to be, almost to the point of dogma, that anything really creative or fun must be "unhealthy" and bad. But do we know this to be true, at least true the way scientists understand truth? Is there a literature of statistical studies that measure and document the impact of ordinary landscape interventions on the degree of health exhibited by the land in a way analogous to clinical trials that measure pharmaceutical effectiveness and side effects? I suspect there is not, leaving the matter prey to ideology and politics. We ecologists are at least partly to blame. Who wants to spend several years monitoring the biomass production, nitrogen dynamics, and water budget of the Dumbarton Oaks garden when you could be freezing your toes taking tree cores at Glacier Bay?

When it comes to measuring ecosystem health, the problem becomes even more complex. Ecologists are rather good at declaring the patient near death or dead, and the measurements to back up this judgment are rather easy to acquire and understand. But detecting a slight temperature rise or an arthritic limp is not nearly as simple. Natural systems are naturally resilient, and hide their illnesses until they are really ill. And ecologists have not developed methodologies to measure the more subtle effects of cultural manipulations of the land.

With the ascendancy of the new paradigm, this may change. Humans are now recognized as being a part of the natural world, and the ecological study of human interventions, even on the scale of landscape architecture, has become acceptable for sympathetic ecologists. Within the past year, the National Science Foundation awarded a multimillion dollar grant to a study entitled Human Settlements as Ecosystems: Metropolitan Baltimore, Maryland, from 1797 to 2100.[18] Can clinical trials on the ecological impact of the perennial border or the linden allée be far behind?

Given the difficulties in defining health and the lack of empirical evidence to prove that ordinary landscape design interventions are unhealthy or ecologically irresponsible, perhaps a neutral stance in the war between aesthetics and ecology is needed. My own bias inclines toward the position recently articulated by Louise Mozingo, who sees no necessary zero-sum game between ecologically sensitive design and the aesthetic expression of the designer.[19] She calls for the infusion of a new aesthetic into traditional ecological design. The latter, she argues, often leads to boring, unexciting landscapes invisible to ordinary people: "The lack of aesthetic value of most ecological design lends it a ploddingness that is neither appealing to us as designers, nor as humans. It creates a kind of landscape hairshirt that may make some feel holy but sends too many of us running to the nearest Italian garden."[20]

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[17] Anne Whiston Spirn, "The Authority of Nature: Conflict and Confusion in Landscape Architecture," in *Nature and Ideology: Natural Garden Design in the Twentieth Century,* ed. Joachim Wolschke-Bulmahn (Washington, D.C.: Dumbarton Oaks, 1997), 249–61.

[18] Stuart T. A. Pickett, "Human Settlements as Ecosystems: Metropolitan Baltimore, Maryland, from 1797 to 2100," available at http://baltimore.umbc.edu/lter/proposal/proposal.htm.

[19] Louise A. Mozingo, "The Aesthetics of Ecological Design: Seeing Science as Culture," *Landscape Journal* 16 (1997): 46–59.

Mozingo's new ecological aesthetic would be built on five qualities that traditionally contribute to the creation of iconic designs of notable aesthetic value—visibility, temporality, reiterated forms, humanistic expression, and metaphor. In each of these domains, Mozingo finds the rhetoric of ecological design in conflict with any aesthetic language. But it is not at all clear that the preservation of critical ecological processes negates the actual use of such a language in constructed landscape projects. She challenges ecological designers to reassess their morally superior, functionalist perspective: "While ecological design is clearly an ethic, it is not, at present, fully conceived as an aesthetic. . . . Successfully promulgating ecological design requires the recognition and application of culturally based aesthetics."[21]

The value of such a new ecological aesthetic, successfully integrated into the practice of landscape design, would seem to rest on a deep and subtle understanding of the natural world by the designer. This calls for a rigorous scientific understanding that distinguishes fundamental ecological processes from the visual and superficial ecology of natural history. Armed with such an understanding when approaching a particular site, the designer is much freer to identify a set of aesthetic possibilities that will preserve or have minimal impact upon the critical ecological functions of the land. Landscape architects must be prepared to acquire, either as practitioners or students, the necessary level of scientific literacy that this implies.

There may be growing opportunities for defining a scientifically grounded aesthetic in the expanding field of ecological restoration.[22] Highly disturbed sites are readily accessible to this science, and the recovery process is often more forgiving of experimentation. The aesthetic challenges are usually obvious, yet landscape architects have not, as yet, taken any leading role in the intellectual development of this field. The theory of ecological restoration seems to have been largely the province of engineers, ecologists, and New Age philosophers.[23]

A deeper scientific understanding of the natural world can also be a source of inspiration to landscape architects, both as motivation and as artistic idea. The results of such inspiration can be delightfully evocative, but care should be taken to understand where science ends and aesthetics begins. A scientist sees a clear distinction between a decision based on a disciplined and critical understanding of a phenomenon, grounded in community consensus, and a decision based on a more personal, hypothetical perception of that phenomenon. Both are equally valid, but they are different. Too often in writings about design in landscape architecture, science is evoked to lend authority to designs that are not based on a true scientific understanding, and the hybrid becomes more of a politically correct imperative than a personal expression of feelings. Several years ago Anne Whiston Spirn captured this point perfectly: "Ecology as a science (a way of describing the world), ecology as a cause (a mandate for moral action), and ecology as an aesthetic (a norm for beauty) are often confused and conflated. . . . It is important to distinguish the insights ecology yields as a description of the world, on the one hand, from how these insights have served as a source of prescriptive principles or aesthetic values, on the other."[24]

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[20] Mozingo, "The Aesthetics of Ecological Design," 58.

[21] Ibid., 57.

[22] Andrew P. Dobson, Anthony D. Bradshaw, and Arnold J. M. Baker, "Hopes for the Future: Restoration Ecology and Conservation Biology," *Science* 277 (1997): 515–22.

[23] The intellectual development of this field has been chronicled in the pages of *Restoration and Management Notes,* published at the University of Wisconsin; see also A. Dwight Baldwin, Judith DeLuce, and Carl Pletsch, *Beyond Preservation: Restoring and Inventing Landscapes* (Minneapolis, Minn.: University of Minnesota Press, 1994).

The new paradigm, by its contrast with the old, is key to a third way that the scientific nature of ecology can inform landscape architecture. Ecologists and designers think about their work in entirely different ways, which are revealed most conspicuously in the language landscape architects and ecologists use. Look, for example, at the conceptual language Elizabeth Meyer chooses to serve as the theoretical frame of her essay "The Expanded Field of Landscape Architecture":

> The *figured ground* is that undulating body between the figural object and neutral field, between mass and void. It finds structure in the ground, its topographic and geological structure. The *articulated space* is the space between figural space framed by buildings and open space, homogeneous and undefined. This is the realm of the spatiality of plants, hedges, hedgerows, allees, bosques, orchards, and forests; it is a space of layering, ambiguity and change. The *minimal garden,* also called the garden without walls, relies on patterning the ground plane to create a visible landscape. The surface—what is usually undefined—is transformed into a horizontal object that defines an implied space above it—like a Persian rug on the floor.[25]

What is so striking about Meyer's language is how spatial it is. Landscape architects think spatially and practice their discipline spatially. The very roots of the compound word that defines their work, *land* and *scape,* derive from spatial references, as noted by J. B. Jackson: "As far back as we can trace the word, land meant a defined space, one with boundaries. . . . Scape . . . once meant a composition of similar objects . . . Landscape is . . . synthetic space, a man-made system of spaces superimposed on the face of the land."[26]

A design is a spatial object, usually represented in the two-dimensional plan and the three-dimensional model. Designers give form to their inspirations through the manipulation of objects on the surface of the land and the creation of unique spaces. How different this way of thinking is from that of the ecologist.

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[24] Spirn, "The Authority of Nature," 256.

[25] Elizabeth K. Meyer, "The Expanded Field of Landscape Architecture," in *Ecological Design and Planning,* ed. George F. Thompson and Frederick R. Steiner (New York: John Wiley, 1997), 52.

[26] John B. Jackson, *Discovering the Vernacular Landscape* (New Haven, Conn.: Yale University Press, 1984), ii.

Take the new paradigm compared with the old. The superorganism as a metaphor for the climax, steady-state plant community or ecosystem is an idealized concept of a relatively static, unchanging natural world. The new paradigm replaces this fixed, nature-in-balance model with one that is dynamic, contingent, and full of change and uncertainty. For an ecologist, what is interesting about nature is what happened yesterday and how it informs us about what might happen tomorrow. The temporality of nature *is* nature, and insights based on spatial perceptions alone are highly suspect without an understanding of the underlying dynamic processes that created the spatial configuration. This is why an ecologist will carefully measure the annual growth rings of ten thousand tree cores or spend six years on his knees watching violets grow.

If the language of landscape architecture is essentially a spatial language, what is the analogous language for ecologists? I think it is mathematics. Scientists use mathematics to describe the dynamic flux of nature, whether it is the probability of events (statistics) or the description of rates of change (calculus). For the designer, spatial language seems closely linked with the eye and the translation of its perceptions into new spatial configurations. The ecologist distrusts the eye and brings great effort and discipline to the process of acquiring data that unmask the guises of the eye. No wonder "ecological design" is sometimes treated as an oxymoron. Laurie Olin, discussing his own collaborative work with ecologists practicing wetland restoration, makes this difference clear:

> Of great interest to me was their disinterest in what their work looked like. . . . In their early work, they tried to make their new and restored habitats look like those they had studied. . . . They had discovered, however, that many things died, some grew by leaps and bounds . . . and other things just turned up. They found themselves engaged in a sort of wilderness gardening for a few years until the systems and various populations took hold. . . . As a result, they said now they do not bother trying to make a site look "pretty." . . . What nature looks like, or is supposed to look like, appears to be our problem, a cultural matter; it has little to do with ecology.[27]

Landscape architects may not need to worry about the march of time: clients care a lot about how things look, especially while they are paying the fee; they deal with the effects of time later—long after the designer has cashed the check. But this view may be too cynical. A positive alternative sees ecology's new paradigm suggesting a renewed acknowledgment of temporality in landscape design. Such a temporality is one critical element of Mozingo's call for a new aesthetic: "Landscape aesthetics prizes a static vision imposed upon the land. . . . Conventional design sees landscape change not as a vital, imaginative force but as a frightening or disappointing one. . . . The acceptance of change, of moving beyond the fixed vision of the landscape, is ecologically necessary."[28]

An analogy with architecture can be equally persuasive in acknowledging change. Throughout my reading of Stuart Brand's *How Buildings Learn: What Happens After They're*

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[27] Laurie Olin, "Landscape Design and Nature," in *Ecological Design and Planning,* ed. George F. Thompson and Frederick R. Steiner (New York: John Wiley, 1997), 109–39.

[28] Mozingo, "The Aesthetics of Ecological Design," 52.

Built, I found myself creating a parallel volume by substituting the words *landscape architect* for *architect* and *landscape* for *building.* What might this second book look like?

Brand argues that architects do not care about buildings once they are built: "I recall asking one architect what he learned from his earlier buildings. 'Oh, you never go back!' he exclaimed. 'It's too discouraging. . . . Facilities managers have universally acid views about architects. One said, 'They design it and move on to the next one. They're paid their fee and don't want to know."[29] Brand encourages architects to "examine buildings as a whole—not just whole in space but whole in time. . . . In the absence of theory or standard practice in the matter, we can begin by investigating: what happens anyway in buildings over time? . . . Time is the essence of the real design problem."[30] "If you think about what a building actually does as it is used through time—how it matures, how it takes the knocks, how it develops, and you realize that beauty resides in that process—then you have a different kind of architecture. What would an aesthetic based on the inevitability of transience actually look like?"[31] The real life of buildings Brand argues, begins with occupancy: "A building 'learns' only through people learning. . . . Loved buildings are the ones that work well, that suit the people in them, and that show their age and history. . . . What makes a building learn is its physical connection to the people within.[32]

Brand sees the need for a new body of research on the study of buildings in time: "There is a shocking lack of data about how buildings actually behave. We simply don't have the numbers. To get beyond the anecdotal level . . . will take serious statistical analysis over a significant depth of time and an adventurous range of building types. . . . What might be learned from highly detailed longitudinal studies of buildings in use? What changes from hour to hour, day to day, week to week, month to month, year to year, and over decades? This kind of study is the norm in ecology and some of the social sciences; there's no lack of lore about how to do it."[33]

Applying Brand's reasoning to the landscape, the new-paradigm ecologist might rightly ask: How do designed landscapes behave after they are built? Do we have any longitudinal studies that document their interactions with their inhabitants, how they "learn" and adapt, are adapted to, and come to be loved? Do landscape architects want to go back and find out what happened? How would one study the evolution of some famous landscapes after they were built? Would such a temporal aesthetic, informed by the real life of landscapes, give new meaning to "ecological design?"

Perhaps the new paradigm in ecology, then, may stimulate a different dialogue between ecologists and designers around a renewed acknowledgment of temporality in landscape architecture. In one sense, all landscapes are vernacular landscapes, in that they are designed to work and to be worked by people. A working landscape (a landscape that works) is dynamic in ways that ideally express the designer's intent to create not just a spatial object but a successfully designed system of processes. Perhaps the language and literature of landscape architecture could begin to acknowledge that the learning of landscapes is as important as their creation. "A building is not something you finish," notes Brand. "A building is something you start."[34]

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[29] Stuart Brand, *How Buildings Learn: What Happens After They're Built* (New York: Viking Penguin, 1994), 66.
[30] Ibid., 2.
[31] Ibid., 71.
[32] Ibid., 189, 209.
[33] Ibid., 213, 215.

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[34] Ibid., 189.

Environmental Rhetoric, Environmental Sophism: The Words and Work of Landscape Architecture

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Daniel Joseph Nadenicek
and Catherine M. Hastings

While the use of environmental language in landscape architecture is prolific, its direct application to professional practice in landscape architecture has created a problem: More often than not, the words are unfulfilled by the work. Creating "harmony between humans and nature," "providing unity in nature," "healing the environment," and "restoring nature to the city" are goals not easily accomplished. In fact, some within the profession believe that it is impossible to fulfill the promise of those words through the individual projects of landscape architecture. And yet those and other similar phrases are frequently used in the practice of landscape architecture.

Additionally, the profession has developed an environmental canon of sorts that includes contrasting, if not conflicting, rhetorical positions. This ambiguous perspective on environmentalism reflects a similar ambiguity in society at large. Recent polls indicate that fifty-eight to seventy-three percent of Americans consider themselves environmentalists.[1] The percentage of landscape architects claiming to be environmentalists is likely at least as large given the profession's traditional interest in nature. Despite landscape architects' substantial expression of concern for the environment, how they see the profession's role in dealing with an environmental crisis has engendered considerable disagreement, if not discord.[2]

Various rhetorical positions on environmentalism exist within the profession, categorized, for the purpose of this chapter, by deep environmentalism, preservation environmentalism, integrative environmentalism, and ecological environmentalism. Such categorization is not intended to suggest absolute philosophical boundaries or established group positions. In reality, even individual landscape architects express multiple perspectives on environmentalism, which only supports the assertion that misunderstanding, controversy, and debate on environmentalism within the profession is inevitable.[3] In short, the work of the profession does not support the rhetoric, because landscape architects are, in effect, speaking multiple languages of environmentalism.

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[1] A 1990 Gallup poll indicated the high 73 percent figure. Willett Kempton, James S. Boster, and Jennifer Hartley, *Environmental Values in American Culture* (Cambridge, Mass.: MIT Press, 1995), 4–5, 113.

[2] Perhaps there is even an identity crisis of sorts rooted in the diversity of the profession. The model for that diversity (and subsequent communication problems) was probably established in the nineteenth century by Frederick Law Olmsted, who was involved in a rich array of work from small residential landscapes to parks, parks systems, and the preservation of wilderness. Laura Wood Roper, *FLO: A Biography of Frederick Law Olmsted* (Baltimore: Johns Hopkins University Press, 1973).

While a better understanding of the various environmental perspectives can improve communication, a more careful use of language will not correct the schism rooted in the diversity of the profession. If there is a common ground given the multiple perspectives on environmentalism, it appears to be in the profession's traditional role of engaging in the pressing debates of the age through the artistic manipulation of the landscape.

Rhetoric, Sophism, and Environmentalism

Rhetoric has been studied as a productive art since at least the fifth century B.C.E., when the first known written treatment of rhetoric was produced in the Greek settlement of Syracuse. The modern terms *sophists* and *sophism* are derived from contemporaries of Socrates who taught in Athens in the fifth century B.C.E. They were educated men who accepted fees for teaching the sons of the most elite Athenians. Socrates, who did not charge for his tutelage, distinguished himself from the Sophists by teaching that philosophy should be employed to seek truth, while rhetoric should be used only to spread truth. In other words, for Socrates it was only morally permissible to use rhetoric (public persuasion) once dialectic had been used to discern the truth. Sophists, on the other hand, were depicted by Socrates as teaching modes of persuasion to communicate information that was not necessarily for the greatest good of the city-state. Thus, today *sophism* is a negative term used (somewhat unfairly) for formulaic, empty, and possibly unethical rhetoric.

Aristotle wrote a treatise on rhetoric that remains the cornerstone for the discipline to this day, defining rhetoric as "an ability, in each [particular] case, to see the available means of persuasion." He led his students and readers through an exploration of argument and style, and later neo-Aristotelian theorists wrote "how-to" handbooks for persuasion, listing schemes from alliteration to polysyndeton and allegorical tropes to zeugma.[4] Although

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[3] For a recent work that comments on a communication crisis related to environmentalism, see Alston Chase, *In a Dark Wood: The Fight over Forests and the Rising Tyranny of Ecology* (Boston: Houghton Mifflin Company, 1995).

[4] The seminal text on Aristotle's conception of rhetoric is Aristotle, *On Rhetoric,* trans. George A. Kennedy (New York: Oxford University Press, 1991). The clearest modern treatment of classical rhetoric is Edward P. J. Corbett's *Classical Rhetoric for the Modern Student* (New York: Oxford University Press, 1990). For a general overview of the historical development of rhetorical theory, see Patricia Bizzell and Bruce Herzberg, *The Rhetorical Tradition: Readings from Classical Times to the Present* (Boston: Bedford Books, 1990); James L. Golden, Goodwin F. Berquist, and William E. Coleman, *The Rhetoric of Western Thought,* 3d ed. (Dubuque: Kendall/Hunt Publishing Co., 1983). Both of these works contain information on the Sophists. The definitive text on Sophism is Rosamund Kent Sprague, ed., *The Older Sophists* (Columbia: University of South Carolina Press, 1972).

rhetoric is today a negative term for communication meant to obscure or flatter or mislead, its use here employs the older, neutral sense of persuasion. Likewise, this study relies on the original Aristotelian conception of rhetoric as a broad toolbox for persuasion, one not limited to schemes and tropes but concerned with the entirety of the rhetor's decisions, including word choice. Modern rhetorical criticism, or the analysis of the rhetorical effect of discourse, traces its roots to a 1925 landmark essay on the literary criticism of oratory. Its publication gave birth to a new direction in rhetoric studies in the United States.[5]

The rhetorical analysis in this paper began with a metaphysical query into the differing possible relationships between humankind and the natural world. This led to the construction of categories that fell along a continuum from the most ecocentric position, in which humans see themselves as mere animals among all the other species of creation, to the most anthropocentric position, in which humans see themselves as owners of all of creation, which exists to please, satisfy, or profit them. After trying to identify rhetorical strategies in landscape architecture that exemplify this range of positions, all findings appeared to conclude that landscape architects are unreflective in their adoption of conflicting environmental positions and the correlative language. The categories were then modified to reflect not possible metaphysical positions but actual spheres of speech and behavior.

For the purposes of this project, the American Society of Landscape Architects (ASLA) supplied the text used to exemplify the categories of environmentalism. In the handbook's "Code and Guidelines for Professional Conduct," "Declaration on Environment and Development," and "Policies" are numerous statements that, when considered together, constitute a canon of environmentalism for the profession. The statements were developed over a period of time. Statements about open space and wilderness preservation, for example, date from the 1960s and 1970s; the declaration was developed after 1992. The statements about environmental ethics contained in the guidelines were approved in 1995.

The problem for landscape architecture is that members of the profession, as well as the general public, disagree on the boundaries of environmentalism; the meaning of the word has evolved historically, and movements have spun off at different times, all laying claim to the term.[6]

The purely ecocentric position is that in which humans are posited to be part of a larger ecosystem and, as such, have no privileged position within that system. The human animal is decentered, having as many rights to the riches of nature as any other animal, plant, or mineral. This extreme position is best represented historically by John Muir

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[5] Herbert A. Wichelns, "The Literary Criticism of Oratory," in *Studies in Rhetoric and Public Speaking in Honor of James Albert Winans,* ed. A. M. Drummond (New York: Century Co., 1925).

[6] One dramatic example of the ubiquitous use of the term *environmentalism* is James R. Dunn and John E. Kinney, *Conservative Environmentalism* (London: Quorum Books, 1996), which promotes a highly anthropocentric, pro-business perspective.

(1848–1914).[7] Ironically, although Muir is often cited as a "patron saint" of modern environmentalism, his metaphoric style did not become common parlance in landscape architecture.[8] Therefore, ecocentric environmentalism functions here as an ideal state of ontological parity—an unattainable limit that may only be approached by humankind.

All other views of the human-nonhuman relationship—deep environmentalism, preservation environmentalism, integrative environmentalism, and ecological environmentalism—can be classed as anthropocentric to varying degrees. Anthropocentric environmentalism means that the human as actor and experiencer is centered but acts for the benefit of the natural environment from varying perspectives.

To discover the significant terms that reflect the categories of environmentalism, Carol A. Berthold's adaptation of Kenneth Burke's cluster method of rhetorical analysis was used.[9] The ASLA environmental canon was examined, and nouns, adjective-noun pairs, and verbals used as nouns such as gerunds and infinitives were extracted. These were then grouped into clusters according to their denotative proximity to the "ultimate terms," or terms signifying ultimate concepts, for each of the categories. For example, the category of deep environmentalism claims *spirituality* as an ultimate term because this perspective is primary. Other terms reflecting deep environmentalism were then identified as belonging to the logical cluster of terms associated with "spiritual values."[10]

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[7] While a purely ecocentric position is only an ideal (arguably more difficult to attain than selfless action and thought in human society), Muir stands as the person who most closely approached that ideal. At one point wishing to engage fully in nature's power, he rode out a ferocious wind storm in the Sierra forests atop a one-hundred-foot tree. John Muir, *The Mountains of California* (New York: Penguin Books, 1988), 175–76.

[8] For a discussion of the necessity for Muir to use a metaphoric style, see Catherine M. Hastings, "Transcategoreal Knowing: The Paradox of Environmental Rhetoric" (Ph.D. dissertation, Pennsylvania State University, 1996).

[9] Carol A. Berthold, "Kenneth Burke's Cluster-Agon Method: Its Development and an Application," *Central States Speech Journal* 27 (1976): 309. Berthold's method is summarized in Sonia K. Foss's *Rhetorical Criticism: Exploration and Practice* (Prospect Heights, Ill.: Waveland Press, 1989), 367–70. Foss outlined the four steps of the cluster method as "1) identification of key terms or symbols in the rhetorical artifact; 2) charting of terms that cluster around the key terms; 3) discovery of patterns in the clusters around the key terms to determine meanings of the key terms; and 4) naming of the rhetor's motive on the basis of the meanings of key terms." The first step is accomplished by examining the text for words or phrases that have high frequency or high intensity. Often these are "ultimate terms," which denote ultimate ideals or evils to the rhetor, as defined by Kenneth Burke, *A Grammar of Motives* (Berkeley: University of California Press, 1969), 74. The second involves noting the context of each key term to determine other terms that generally occur with it. One method of determining pattern in the third step is to consider terms that contradict the key terms, thus giving rise to the agon half of the method's name. Foss states, "In the contexts surrounding the key terms, then, the critic thinks about the terms that the key terms seem to oppose, suggesting what meaning is not a part of and, in fact, is just the opposite of the meaning of the key term" (369). In this study, ultimate terms for each category were posited, terms that appeared near the ultimate terms were collected, and their opposites were extrapolated to refine the meaning of the terms in their contexts. The final step, to determine the rhetor's motive from the patterns, was not part of this investigation.

[10] "An explanation of human activity which draws upon one term in any cluster will bring all the other terms to bear upon the explanation through a kind of connotative logic. Willy nilly, people are drawn to explain and justify their acts, to urge themselves and others to act, by the internal logic of these dialectical clusters." Michael A. Overington, "Kenneth Burke and the Method of Dramatism," in *Landmark Essays on Kenneth Burke,* ed. Barry Brummett (Davis, Calif.: Hermagoras Press, 1993).

Deep Environmentalism

The deep environmentalist (sometimes referred to as radical environmentalist or ecofundamentalist) position holds that the human actor is somewhat privileged, especially in acting on behalf of nature, which the moral stance of this position mandates. Deep environmentalism holds that nature has intrinsic rights that stem from a spiritual base, although the origin of this spirituality is not uniform among deep environmentalists. The spiritual experience of nature may be drawn from pagan Gaia worship, Eastern religions such as Taoism or Buddhism, or any of the many New Age understandings of the human-nature relationship.[11] Deep environmentalism functions as a transcendent value that infuses the other three categories to varying degrees. What deep environmentalists have in common are not their spiritual bases but their belief that nature has some intrinsic rights that humans are responsible for protecting. Deep environmentalism's proponents include Dave Foreman, Arne Naess, and, had he lived to develop his conception of the land ethic, Aldo Leopold.

The deep environmentalist perspective is expressed in the "Declaration on Environment and Development" in the *ASLA Member Handbook.* Landscape architects are told that they must "heal, regenerate, restore, reclaim and nurture degraded ecosystems as a part of the design and planning process."[12] They are also to commit to the use of "indigenous . . . materials and plants." Deep environmental rhetoric is clearly tied to professional ethics. Because of the charge to accept "responsibility for the consequences of...design, planning, management and policy decision[s]" on the viability of ecosystems and ultimately the health of the planet,[13] it is intimated that any work to the contrary is, in fact, unprofessional. Landscape architecture has adopted terms with deep environmental connotations such as *healing, holistic, spiritual, earth,* and *native,* promoted with missionary zeal.

Preservation Environmentalism

Preservationist environmentalists seek to preserve an unsullied nature and restore degraded lands. They are anthropocentric to the degree that they view humankind as being responsible for protecting and maintaining wild areas. Often, this is due to a deep environmental spiritual connection to nature, but not all preservationists are deep environmentalists; motivations can range from a romantic desire to return to a pre-Fall Eden to a selfish need to be "purer than Thou." The preservationist perspective in the United States has its roots in the closing-of-the-frontier anxiety of the 1890s, and it was a subtext of the Gifford

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[11] Ian McHarg, reflecting views of the historian Lynn White and others, suggested that the Judeo-Christian ethic was responsible for environmental woes and that society should look to other religions that hold a more sensitive attitude toward the environment. Ian L. McHarg, *Design with Nature* (Garden City, N.Y.: Natural History Press, 1969), 75–77. McHarg's perspective on religion was later challenged by Nancy Watkins Denig, "'On Values' Revisited: A Judeo-Christian Theology of Man and Nature," *Landscape Journal* 4, no. 2 (1985): 96–105. Today, proponents of deep environmentalism in the United States come from numerous religious backgrounds, including Christianity. Kempton, Boster, and Hartley, *Environmental Values,* 89–92.

[12] *ASLA Member Handbook* (Overland Park, Kans.: Atwood Convention Publishing, 1995): 297.

[13] Ibid., 2.

Pinchot-Theodore Roosevelt brand of conservationism of the early twentieth century.[14] Preservationists are less apt to view naturally occurring features such as fossil fuels, minerals, and forests as resources for humans to tap. Instead, they have historically argued for the preservation of certain wild places regardless of the prized resources that may go unclaimed. The remaining sequoia stands of California are testament to the power of this position. David Brower, the deposed executive director of the Sierra Club now serving on its board of directors, is the nation's preservationist standard-bearer.

Kate Soper in *What Is Nature?* identifies three important perspectives on nature in environmental discourse—a lay perspective, a metaphysical concept, and a realist concept. The lay perspective identifies nature as that which is nonhuman. Those things that are the least like the urban or industrialized world are considered the most natural. "This is the nature of immediate experience and aesthetic appreciation," writes Soper, "the nature we have destroyed and polluted and are asked to conserve and preserve."[15] When landscape architects speak of nature related to work on traditional restoration and preservation projects, they are often referring to nature from this lay perspective.

Nature in need of preservation, protection, and care and as something separate from humans is clearly expressed in the *ASLA Member Handbook.* For example, under "Policies," the handbook states that the "Society believes that the preservation of wilderness, wildness, natural processes, and natural communities of plant and animal life is . . . highly important." Further, the ASLA's "Declaration on Environment and Development" instructs landscape architects to identify, encourage, and develop "economic and other incentives for the preservation, protection, [and] restoration" of the natural environment.[16] Terms frequently used in the ASLA canon that reveal preservationist roots include *responsibility, native* (as in species), *indigenous, pre-existing, preservation, wildness,* and *wilderness.*

Integrative Environmentalism

Most Westerners understand their relationship to the natural world as Adam's post-Fall relationship to the Garden—as stewards of a world we did not create. From this vantage point, humans have a special responsibility to protect all creation, and this responsibility also endows us with the right to use all creation to meet our needs. On the one hand, humans are part of the Garden and draw our sustenance from it; on the other hand, the Garden exists for us. For Ralph Waldo Emerson (1803–1882), nature existed for us as a font of not only physical nourishment, but also spiritual nourishment; nature was essential to human spiritual development. He advocated a harmonious integration of nature and human culture for the optimal mental, physical, and spiritual development of humankind.[17] Henry David Thoreau (1817–1862), a friend and protégé of Emerson, attempted to embody Emerson's integration through his meditations at Walden Pond. While the two writers understood the integration of humankind and nature from diverse standpoints—Emerson from a metaphysical stance and Thoreau from an experiential position—they converge as the patron saints of an integrative environmentalism that persists today as arguably the most common view of environmentalism.

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[14] For a discussion of the distinction between conservationism and preservationism of that period, see Hastings, "Transcategoreal Knowing," 35–55.

[15] Kate Soper, *What Is Nature? Culture, Politics and the Non-Human* (Cambridge, Mass.: Blackwell Publishers, 1995), 156. One of the best examples of a passionate argument for the environment from the lay perspective is Bill McKibben, *The End of Nature* (New York: Random House, 1989).

[16] *ASLA Member Handbook,* 297, 298.

Soper's metaphysical view of nature aligns with this integrative category of environmentalism. According to Soper, "One is invoking the metaphysical concept in the very posing of the question of humanity's relation to nature."[18] Nature as a human construct, the idea of integration, and suppositions about human naturalness fall into Soper's category of the metaphysical perspective.[19] Those designers involved in the recent campaign for sustainable development are in fact referring to nature from this metaphysical perspective.

Numerous statements in the *ASLA Member Handbook* reflect a desire for integration. In the declaration, statements recognizing biodiversity are paired with statements recognizing cultural diversity. The need for "harmony, equity and balance" between cultural communities and natural communities is also highlighted. The strongest stand on integration is found in the many statements on sustainable development: "Human harmony with the environment" is considered "the central purpose of sustainable development, ensuring health for both nature and humankind." Likewise, the declaration states that the "health and well-being of people, their cultures and settlement; of other species [and] ecosystems are interconnected, . . . and dependent on each other."[20] Language from integrative environmentalism that permeates the ASLA canon includes *sustainable development, equity, garden, cooperative, interdependence, diversity* (cultural and natural), *balance,* and *harmony.*

Ecological Environmentalism

Distanced from the moralistic or sentimental understandings of nature are those offered by science. Ecological environmentalism brings an understanding of the world as process. Humans have the dual role of being both part of the process and observers of it.

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[17] For information on Emerson's perspective on integration and the influence of his aesthetic ideas on the nineteenth-century profession of landscape architecture, see Daniel Joseph Nadenicek, "Emerson's Aesthetic and Natural Design: A Theoretical Foundation for the Work of Horace William Shaler Cleveland," in *Nature and Ideology: Natural Garden Design in the Twentieth Century,* ed. Joachim Wolschke-Bulmahn (Washington, D.C.: Dumbarton Oaks, 1997), 59–80; idem, "Civilization by Design: Emerson and Landscape Architecture," *Nineteenth Century Studies* 10, no. 1 (1996): 33–48; and idem, "The Poetry of Landscape Ecology: An Historical Perspective," *Landscape and Urban Planning* 37, no. 1 (1997): 123–27.

[18] Soper, *What Is Nature?* 155.

[19] On the metaphysical perspective on nature, consult the hotly debated William Cronon, "The Trouble with Wilderness; or, Getting Back to the Wrong Nature," in *Uncommon Ground: Toward Reinventing Nature,* ed. William Cronon (New York: W. W. Norton and Company, 1995).

[20] *ASLA Member Handbook,* 296.

1. Aldo Leopold (from Laurie Olin, "Wide Spaces and Widening Chaos," Landscape Architecture *80, no. 10 [1990]: 78)*

2. Rachel Carson (from Olin, "Wide Spaces and Widening Chaos," 79)

Ecologists, by this definition, are scientists or activists building on a scientific understanding who privilege human experience or needs even while protecting the existence of other species. Other species, such as snail darters and spotted owls, are to be protected because they serve as bellwether species for the overall health of the planet. An ecologist—whether a follower of Robert Cook's old paradigm or of the new paradigm—sees nature as a set of variables that must be kept in a precarious balance (in the old paradigm) or dance (in the new paradigm) for the long-term survival of the human species, along with our cohort species. The realist or scientific perspective in Soper's triad of perspectives on nature is similarly about the "structures, processes and causal powers" at work in the physical environment.[21] This is the nature to whose laws the world is subject. Criticism of sustainable development projects, particularly those that are done poorly, invariably emanates from the realist perspective.

Ecological environmentalism is the offspring of the work of Aldo Leopold (1887–1948) and Rachel Carson (1907–1964). Leopold's *Sand County Almanac* (1949) set the stage for the public acceptance of Carson's apocalyptic denouncement of pesticides in 1962, which in turn kicked off the modern environmental movement in the 1960s (Figs. 1 and 2).[22]

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[21] Soper, *What Is Nature?* 155.

[22] Laurie Olin, "Wide Spaces and Widening Chaos," *Landscape Architecture* 80, no. 10 (1990): 77–78, suggests that landscape architecture is a "borrowing discipline" and that ideas and ideals were directly appropriated from Leopold and Carson. The illustrations are taken from this article.

The *ASLA Member Handbook* recognizes the importance of the science of ecology. For example, its declaration charges landscape architects with fostering "biological" diversity. Their work should "recognize that other animal species are essential components of ecosystems" and conserve existing " habitats."[23] Ecological environmental rhetoric found in the ASLA canon includes *renewable, recycled, long-range, mitigation, endangered species, invasive species, biodiversity, environmental impact, environmentally sensitive, ecosystems,* and *habitat.*

Landscape architecture has adopted some of the rhetoric from these four anthropocentric positions, as well as a bevy of icons in Muir, Emerson, Thoreau, Leopold, and Carson. The ASLA's "Guidelines for Professional Conduct," "Declaration on Environment and Development," and "Policies" of the profession, then, include various categories of environmental rhetoric. This breadth of environmentalism, however, guarantees the occurrence of conflicts, contradictions, and critical misunderstandings within the profession, given the divergent philosophical positions the key words of each category represent.

Environmental Rhetoric: Public Mind and the Profession

Landscape architects seized an opportunity to promote their work during the popularization of environmentalism in the 1960s and 1970s. The profession positioned itself as part of an "environmental solution" given its perennial engagement with nature. Ironically, while landscape architects verbally advocated deep environmental and preservationist perspectives and engaged in large-scale planning projects informed by ecological science, much of the work of the profession was, in fact, integrative and weighted toward the art of design. By the postmodern era (especially the 1980s and 1990s), this conflict was resolved for many with the promotion of the integrative potential of sustainable development—a concept that allowed for a concurrent emphasis on intervention (including development) and environmental amelioration.

During the period from 1962 to 1973, environmental rhetoric began to resonate with the general public and the profession of landscape architecture. Myriad forces resulted in the focusing of the American mind on the environment in the 1960s—the first such awakening since the dust bowl and farm foreclosure land crises of the 1930s had been pushed out of the American consciousness, first by World War II and then by postwar recovery and prosperity. With the rise of the civil rights movement and then anti-Vietnam War sentiments, it became more acceptable to criticize and dissent from government policies on land use and issues of litter, air and water pollution, population, recreation, and wilderness preservation.[24]

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[23] *ASLA Member Handbook,* 297.

[24] General information about the rise of environmentalism during this period is found in Stewart L. Udall, *The Quiet Crisis* (New York: Holt, Rinehart, and Winston, 1963); Samuel P. Hays, *Beauty, Health, and Permanence: Environmental Politics in the United States, 1955–1985* (Cambridge: Cambridge University Press, 1987); Roderick Nash, *Wilderness and the American Mind,* 3d ed. (New Haven: Yale University Press, 1967); Barry Commoner, *The Closing Circle: Nature, Man, and Technology* (New York: Alfred A. Knopf, 1971).

Much as Rosa Parks was to the birth of the civil rights movement, Rachel Carson was to modern environmentalism. With the publication of book *Silent Spring* in 1962, the public became aware of scientific evidence of pollution and its consequences. She fed into a new romanticism about the land that was being fueled by the Sierra Club, which under David Brower had published several large-format books of landscape photography by such masters as Ansel Adams. These books and later the Sierra Club calendars brought the club out of its obscurity in California to national relevance.

The Johnson administration, with the special help of Interior Secretary Stewart Udall, passed the Wilderness Preservation Act in 1964. President Johnson's wife, Lady Bird, campaigned for roadside beautification in the form of wild flower plantings, billboard eradication, and litter pickups. The growing public awareness of various environmental concerns—air pollution, water pollution, and wildlife destruction—provided newfound opportunities for landscape architecture, a profession with a long concern for nature and a track record of successfully coordinating multidisciplinary collaboration. In 1965, Ian McHarg reorganized the landscape architecture program at the University of Pennsylvania to include regional planning and a systematic study of all of the relevant sciences. In that vein, McHarg wrote in *Landscape Architecture* in 1967, "Where the landscape architect commands ecology he is the only bridge between the natural sciences and the planning and design professions, the proprietor of the most perceptive view of the natural world which science or art has provided."[25] McHarg clearly articulated the opportunities for the profession—one, he believed, all too often engaged in projects that were nearly irrelevant to the pressing needs of the times.

In 1968 Congress passed both the National Wild and Scenic Rivers Act and the National Trails Act, and the biologist Paul Erlich had a best-seller with *The Population Bomb.* The environmental awareness of the 1960s had its culmination in Earth Day, first held on 22 April 1970. Created by Wisconsin senator Gaylord Nelson, Earth Day resulted in unforeseen coalitions of groups ready to help the environment—hunters and hikers, society matrons and women's libbers, legislators and grassroots activists. The movement continued its momentum with the Clean Air Act of 1970 and the Clean Water Act of 1972, both reflecting the agenda of Maine Democratic senator Edmund Muskie. The scientist Barry Commoner put more evidence into the hands of ordinary people with his summary of environmental threats, *The Closing Circle,* released in 1971. This flame was fanned the next year by the publication of *The Limits to Growth* by the Club of Rome, which brought Malthusian concepts home, where Zero Population Growth was being discussed. The Endangered Species Act, passed by Congress in 1973, was another landmark for the environmental movement.

All of those activities led to the widening appeal of both environmentalism and environmental rhetoric. A 1968 Gallop poll, for example, indicated that "85% of Americans were concerned about such evils as air pollution, soil erosion, and wildlife destruction."[26] A *New York Times* article recorded the urban planner Robert Moses quotation, "If you buck the environmental trend you'll be shunned as germ carrier."[27] In popular coffee table books, Thoreau's writing was pulled apart into bite-sized quips accompanied by beautiful scenes of nature.[28] Even the media reflected the widening appeal of this ethical perspective on the environment. One television advertisement, for example, showed a Native American shedding a tear as he watched the destruction of the sacred land.[29]

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[25] Ian L. McHarg, "An Ecological Method for Landscape Architecture," *Landscape Architecture* 57, no. 2 (1967): 105.

McHarg's *Design with Nature* (1969) was the guidebook for a new generation of landscape architects dedicated to cleaning up the American landscape and planning development that fell lightly on the land. McHarg wrote, "The purpose of this exploration is to show that natural process, unitary in character, must be considered in the planning process."[30] If landscape architects worked in a rational manner, with a scientific understanding of natural systems, and in collaboration with other scientists, McHarg argued, they could enhance human life and develop the landscape in a way that prevented, rather than caused, environmental damage. In articles for *Landscape Architecture* and in *Design with Nature,* McHarg presented numerous examples of environmental systems planning for landscape architects to emulate. McHarg's method and approach took the profession by storm. Graduates of the University of Pennsylvania program saw themselves as missionaries, and *Design with Nature* became a required text for most programs of landscape architecture at other schools. In that light, it should not be surprising that during the late 1960s and 1970s, *Landscape Architecture* was filled with large-scale planning projects with an ecological focus.[31]

Heidi Landecker has commented that McHarg, as a "wordsmith" capable of "effectiveness with language," gave an "eloquent voice" to the profession of landscape architecture.[32] In *Design with Nature,* McHarg made it clear that ecological planning must be coupled with environmental advocacy if the profession was to make any substantial difference. That advocacy often inspired the use of the morally laden language of deep environmentalism coupled with the science of ecology:

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[26] David Lowenthal, "The Environmental Crusade: Ideas and Realities," *Landscape Architecture* 60, no. 4 (1970): 291.

[27] Ibid.

[28] For example, see Robert L. Polley, *America the Beautiful in the Words of Henry David Thoreau* (Waukesha, Wis.: Country Beautiful Foundation, 1966), which includes a poetic preface statement by Lady Bird Johnson.

[29] Another advertisement of the era featured Susan Spotless, a young girl intent on teaching the older generation the responsibility of picking up litter.

[30] McHarg, *Design with Nature,* 65.

[31] There are numerous mentions of a new ecological approach found in *Landscape Architecture* beginning in the mid-1960s. A special issue in January 1967 promoted the ecological systems method. From that point on (especially through the 1970s), environmental systems projects were commonplace within the pages of the magazine. Daniel Joseph Nadenicek and Cheryl Wagner, "*Landscape Architecture:* Barometer of a Profession," Council of Educators in Landscape Architecture, Asheville, N.C., 1997.

[32] Heidi Landecker, "In Search of an Arbiter," *Landscape Architecture* 80, no. 1 (1990): 88.

> This book is a personal testament to the power and importance of the sun, moon, and stars, the changing seasons, seedtime and harvest, clouds, rain and rivers, the oceans and the forests, the creatures and the herbs. They are with us now, co-tenants of the phenomenal universe, participating in that timeless yearning that is evolution, vivid expression of time past, essential partners in survival and with us now involved in the creation of the future.[33]

As Anne Whiston Spirn illustrates in this volume, McHarg in professional practice developed the landscape for human occupation and designed communities intended to integrate nature and culture, but the force of his writing generally indicated a separation of humans and nature. To McHarg, the policies and practices of the past had been immoral, while his rational scientific approach offered the potential for significant healing. McHarg engaged in environmental evangelism to ensure the success of his approach and to enlighten the public. In the years that followed, the rhetoric of deep environmentalism permeated thoughtful practice and education in landscape architecture. Even texts on the history of landscape architecture wholeheartedly embraced the environmental advocacy role. Jeffrey and Susan Jellicoe, in the preface to *The Landscape of Man: Shaping the Environment from Prehistory to the Present Day,* described the field as holding responsibility for preserving the balance of nature.[34]

Thus, Rachel Carson's clarion call for environmental policy reform was issued at the very moment that the American public was primed for an era of protest and activism. The energy of the new environmental movement spawned a whole new vocabulary that was appropriated by the public and by a profession with an historical interest in the natural world. McHarg's reforms at Penn and his seminal book galvanized landscape architecture.

Landscape architects involved with ecological planning during the 1970s, in suggesting the value and scientific legitimacy of their work, challenged (directly or indirectly) the usefulness of aesthetics and creative intuition.[35] As a consequence, by the late 1970s and early 1980s many dissenting voices combined to express an audible challenge to the McHargian approach, dubbed "plan with nature."[36] In 1981 Steven Krog argued that the aesthetic richness long associated with landscape architecture had been lost to rational planning efforts.[37] Art, he suggested, should once again be the focus of practice in landscape architecture.[38]

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[33] McHarg, *Design with Nature,* 5.

[34] In other words, the growing popularity of environmentalism, in effect, influenced the way history was viewed and written. "The world," wrote the Jellicoes, "is moving into a phase when landscape architecture may well be recognized as the most comprehensive of the arts. The reasons for this…[include]: (a) the existing delicately balanced order of nature within the biosphere, or protective envelope of the planet, is being disturbed by the activities of man, and it seems that only his own exertions can restore a balance and ensure survival; (b) these exertions call first for ecosystems that are no more than a return to an efficient animal state of sustained existence." Jeffrey and Susan Jellicoe, *The Landscape of Man: Shaping the Environment from Prehistory to the Present Day* (New York: Viking Press, 1975), 7. In similar fashion, Albert Fein, *Frederick Law Olmsted and the Environmental Tradition* (New York: G. Brassiller, 1972), portrayed Olmsted as a hero of environmentalism.

[35] There were a few, even at the height of McHarg's influence, who suggested the importance of melding humans and nature through art. The divergent perspectives were debated in Garrett Eckbo and Neil Porterfield, "An Eckbo Porterfield Ecological Exchange," *Landscape Architecture* 60, no. 3 (1970): 200–2. Porterfield suggested that the goal of landscape design should be to "put all elements [of nature] into proper context," leading to "separatism" where appropriate. Eckbo, on the other hand, suggested that Porterfield's "deterministic" approach was void of human expression. It is natural for humans to order nature, Eckbo argued, and in that ordering there exists an opportunity to "produce the happiest marriage between reality and fantasy"—to allow art to strike a chord in the minds and emotions of observers.

In the years that followed that charge, postmodern criticism and changes in ecological theory influenced a general trend toward an integration of humans and nature. During the 1980s and 1990s, debates on those topics were reflected in the scholarship of landscape architecture.[39] Spirn, in the *Granite Garden* (1984), demonstrated possibilities for integration in urban environments.[40] And more recently, Elizabeth Meyer has argued that the old separation of humans and nature should be replaced with a new paradigm of "hybrids, relationships, tensions" and "a continuum of human nature and non-human nature."[41]

These perspectives on integration are a close fit with (and may have even contributed in a general way to the evolution of) the concept of sustainable development. While sustainability has its roots in late-eighteenth-century Germany, the idea of sustainable development was promoted in the 1980s in a few influential publications, including the Brundtland Commission report *Our Common Future* (1987).[42] The concept was further developed by the Rio Declaration on Environment and Development.

The idea of sustainable development is generally distinct from the idea of restoring or preserving nature. Sustainable development seeks to interlace humans and nature, while restoration (especially at the large scale) often allows nature to stand separately, sometimes out of remorse for the damage humans have caused. This is not to say that individuals cannot be simultaneously in favor of sustainable development and restoration, but the rhetoric emerges from distinct philosophical positions.[43] By the early 1990s, then, many in landscape architecture gave greater weight to the rhetoric of integration, especially with the new focus on sustainable development—a useful concept for a profession that designs, plans, builds, and fabricates landscapes. Integration (including the idea of sustainable development) has been readily accepted into the evolving environmental canon of the profession. Other beliefs, philosophies, and rhetorical positions, however, did not disappear. All are included into policy statements emphasizing landscape architecture's greenness and unique position in providing solutions to the environmental woes of the world.

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[36] Landecker, "In Search of an Arbiter," 89.

[37] Steven R. Krog, "Is It Art?" *Landscape Architecture* 71, no. 3 (1981): 373–76.

[38] Catherine Howett, "New Directions in Environmental Art," *Landscape Architecture* 67, no. 2 (1977): 45, wrote that artists in the landscape open the opportunity for generating "new forms for the accommodation of man's presence to a mysterious and beautiful world which is the real work of landscape architecture." Those ideas were further developed in Catherine Howett, "Systems, Signs, Sensibilities: Sources for a New Landscape Aesthetic," *Landscape Journal* 6, no. 1 (1987): 1–12, where she suggested that a new landscape design aesthetic was necessary for a solution to the environmental crisis and that experiments in landscape art provided excellent fodder for discussion.

[39] While the authors discussed below may or may not view themselves as postmodernists, their work nevertheless promotes an emphasis on integration.

[40] Anne Whiston Spirn, *The Granite Garden, Urban Nature and Human Design* (New York: Basic Books, 1984). Another example from the same period is John Tillman Lyle, *Design for Human Ecosystems: Landscape, Land Use, and Natural Resources* (New York: Van Nostrand Reinhold Company, 1985), which restores the importance of human creativity to the design process.

[41] Elizabeth K. Meyer, "The Expanded Field of Landscape Architecture," in *Ecological Design and Planning,* ed. George F. Thompson and Frederick R. Steiner (New York: John Wiley & Sons, 1997), 45–79.

[42] See Donald Worster, *The Wealth of Nature: Environmental History and the Ecological Imagination* (New York: Oxford University Press, 1993), 142–55. *Our Common Future* resulted from several meetings (1983–88) of the World Commission on Environment and Development (Brundtland Commission), chaired by Norwegian prime minister Gro Harlem Brundtland.

The Words of the Work

The layered and often conflicting rhetoric found in statements of ASLA policy can also be clearly found in projects of landscape architecture. That landscape architects have appropriated the amalgam of environmental rhetoric found in society at large is, in part, a reflection of the profession's attempt to accomplish a parallel diversity in its work: it wishes to both fix the environment and comment on it; it engages in projects at numerous scales and for numerous purposes; and it operates from varying perspectives—on occasion approaching an ecocentric position—that typically follow an anthropocentric agenda.

An analysis of various project types help to provide more clarity about the specific intent and meaning of the words that represent the four categories of environmental rhetoric. These project types were chosen after a careful study of *Landscape Architecture* (1965–present) and other sources in which project descriptions are provided. Two general types of projects frequently employ environmental rhetoric—those seeking some direct amelioration of environmental problems and those offering environmental commentary (design and the accompanying words intended to inform, persuade, and/or provoke thoughts or emotions on the subject of environmentalism). The environmental amelioration category is further divided into (1) restoration projects that highlight a separation of humans from nature and (2) integrative community development projects. The environmental commentary category includes (1) projects that purposefully fabricate spectacle using environmental rhetoric sophistically and (2) environmental art projects. By making these distinctions, environmental language can be analyzed and underlying philosophies identified. It should be emphasized, however, that projects can and do fall into both major categories and potentially into several subcategories. For the sake of brevity, discussion is confined to only one project related to each project type. A table is provided to fit other projects to each genre (Fig. 3).

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[43] There has been considerable scholarship focused on distinctions between ideas of preservation (and restoration intended to separate) and sustainable development. The issue as it relates to wilderness preservation was hotly debated in J. Baird Callicott, "The Wilderness Idea Revisited: The Sustainable Development Alternative," *Environmental Professional* 13, no. 3 (1991): 235–47; Holmes Ralston III, "The Wilderness Idea Reaffirmed," *Environmental Professional* 13, no. 4 (1991): 370–79; and Glenn Parton, "The Rise of Primitivism and the Fall of Civilization: A Reply to J. B. Callicott and Holmes Ralston, III," *Environmental Professional* 16, no. 4 (1994): 366–71. Environmental historian Donald Worster, *The Wealth of Nature,* 142–55, also highlights the distinctiveness of sustainable development.

3. Table of restoration, integrated community, fabricated spectacle, and environmental art projects

Restoration Projects

PROJECT/DESIGNER	SOURCE	WORDS	COMMENTARY
Damaged site, Grand Tetons; National Parks Service	*Landscape Architecture* (1992)	Visitors will have the opportunity to understand "what is meant by native." Muir is quoted, "Nothing dollarable is safe however guarded."	Even though the site was a motel–gas station complex for years, the words suggest a separation of humans and nature (importance of the native state). Capitalistic intentions would negate the special natural quality of the recreated landscape.
Sewage treatment site, Seattle, Washington; Danajieva	*Landscape Architecture* (1992)	Design as means of "mending the environment"	Some of the language emphasizes separation, though the landscape is in many ways integrative.
Texler Memorial Park, Allentown, Penn., and Rochester Psychiatric Center, Rochester, N.Y.; Andropogon	*Landscape Architecture* (1991)	The "mission is to repair disrupted natural places."	The idea is to put nature back the way it was even though these sites are clearly cultural landscapes.
Lake County Forest Preserve, Liberty, Ill.; Landscape architects employed by the district	*Landscape Architecture* (1984)	The project demonstrates "it is never too late to recover a landscape" to its original condition.	The emphasis is on returning the landscape to its condition before white settlement. It is a reflection of nature in need of repair due to the damage caused by humans.

Integrative Community Projects

PROJECT/DESIGNER	SOURCE	WORDS	COMMENTARY
Haymount, Va.; Duany and Plater-Zyberk	*Urban Ecologist* (1996)	"Neighborhoods" interconnected with "wildlife corridors and open space" covering two-thirds of the site.	Emphasis on integration (human ecology and natural ecology). For years before this project, DPZ was criticized for a lack of attention to ecology.
Farmington, Minn.; Design Center for the American Urban Landscape	*Orion* (1994)	"A functional 'green' infrastructure of streams and ponds . . . lends distinction and interest to the new neighborhood, while providing wildlife habitat and recreational opportunity."	Morrish and Brown clearly indicated a desire to meld humans and nature. They talk of exposing infrastructure as a way of reconnecting humans to the processes of the landscape.

(continued on next page)

Cambridge, Minn.; Joan Nassauer and Andrew Caddock	"Project Report" (1997)	"The design will bring the wetland ecological characteristics of cleaning stormwater and biodiversity into the surrounding matrix of residential development." It will also "reinforce an ecological aesthetic, and recreational" potential.	The language of integration is strong throughout the report. The word *biodiversity* is expressed but not defined.
Ahmanson Ranch, Ventura County, Calif.; FORMA	*Landscape Architecture* (1994)	Designers intend development "that is self-contained, self-maintained, and ultimately environmentally sustainable."	An emphasis on the integrative potential of sustainable development.

Fabricated Spectacle

PROJECT/DESIGNER	SOURCE	WORDS	COMMENTARY
Merck Corporation; Hunterdon County, N.J.; Hollander	*Landscape Architecture* (1993)	A "native" landscape, in tune with nature, developed "lightly on the land." The "corporate landscape goes native."	Appropriate words to show that the corporation cares about the environment. To accomplish the environmentally sensitive look, a two-level subterranean garage was constructed for the two thousand cars driven to work by employees.
Montreal Biodome, Montreal, Canada; Ackaoui and Associates	*Landscape Architecture* (1994)	An "interior ecosystem" and a "naturalistic environment" to provide "places for animals." Dozens of habitats allow for the possibility of "landscape immersion." Designers show a concern about the "threat to natural areas."	Words connoting scientific legitimacy and a moral imperative despite the fact that the intent is spectacle and entertainment
Weyerhaeuser Corporation, Tacoma, Wash.; SWA Group	*Landscape Architecture* (1990)	The headquarters "merges seemlessly" with the environment and is intended to "integrate" work and nature.	Designed as a close fit with nature by a corporation that profits from landscape management and resource extraction
Disney's Wild Kingdom, Orlando, Fla.; Jones and Jones	*Outside* (1998)	"I think we can . . . say the Garden of Eden isn't found along the Tigris and Euphrates. It's right here." People will feel "connected to animals" understanding "the importance of the conservation message." They will witness "the unpredictable antics of animals in their own environments."	Despite the environmental language, the animals, of course, were relocated, and the entire landscape is created for the purpose of entertainment.

Environmental Art

PROJECT/DESIGNER	SOURCE	WORDS	COMMENTARY
Ross's Landing, Chattanooga, Tenn.; SITE, Inc.	*Critique of Built Works* (1996)	The landscape "documents the area's natural and man-made heritage." It is intended to create an "image of natural ecosystems."	Words from the various environmental categories are used to suggest that multiple environmental lessons might be gained by visiting the landscape.
Cumberland Park, Toronto, Canada; Martha Schwartz	*Landscape Architecture* (1993) and (1994)	Eight zones "symbolizing Canadian habitats." It is about both environmental education and "treating nature as a specimen."	The words and work represent nature and challenge visitors to consider the relationship between humans and nature.
Leonhardt Lagoon, Dallas, Texas; Patricia Johanson	*Critique of Built Works* (1996)	Art creates "microhabitats." The work teaches as well as "supports ecological function." A clear ethic of stewardship "and restoration."	The design is not only intended to represent (didactic purpose) ecological systems but artfully assist in ecological development.
Planned Parenthood, Philadelphia; South Street Design	*Landscape Architecture* (1990)	The paving represents "Wissahickon Creek," and the black area symbolizes "deposition and erosion." "The intent is not to copy nature, but to create a garden" inspiring environmental contemplation.	Environmental education is an expressed purpose.

Efforts at Amelioration

Kate Soper's three concepts of nature—lay, metaphysical, and realist—are discussed here in relation to restoration projects emphasizing separation and community projects promoting integration. Critiques of each project type come from opposing positions on nature. That is, while those arguing for restoration may see nature from a lay perspective, they are often criticized by those viewing nature from the metaphysical point of view. Likewise, while proponents of integration often draw arguments from a metaphysical concept of nature, they are frequently challenged by those holding a realist (scientific) perspective.[44]

Separation through Restoration. While numerous restoration designs are connected with integration projects, many others clearly imply a separation. The emphasis here is on restoration that reflects the separation of humans and nature. In this regard, one of the most dramatic examples of a large-scale restoration project found in *Landscape Architecture* is the Walnut Creek National Wildlife Refuge, undertaken by the U.S. Fish and Wildlife Service and planned by the Philadelphia firm of Wallace, Roberts and Todd (WRT—McHarg was a founding partner of the firm). The intent of the project was to return 8,600 acres of corn and soybean fields to various natural habitats, including a substantial native prairie restoration (Fig. 4). A sense of retribution for past deeds was conveyed in the text describing the project: "Iowa is almost synonymous with prairie; yet farming has consigned the tall grass prairie to the rarest of North American biomes. More than 99.9% of Iowa's 30 million prairie acres have fallen to the plow."[45]

While no one can dispute that restoration has been important from an ecological perspective, a postmodern critique emphasizes the cultural intent of the work. From that perspective, the words above clearly indicate that the Walnut Creek Project was intended to spark a sense of nostalgia or, more probably, guilt and confession for the destruction wrought on the landscape by human interaction.[46] Iowa had been converted from prairie to farmland in a single generation. In that context, the project can be seen as providing not only prairie for wildlife habitat but also penance—a way of easing consciences about past deeds. Restoration projects clearly separated from human habitation allow for such repentance without dramatically changing the way any of us live, work, or move through the landscape. Restored landscapes, then, often stand as ruins, reminding us of what once existed and the damage we caused. Again, critics of these projects more often than not argue from

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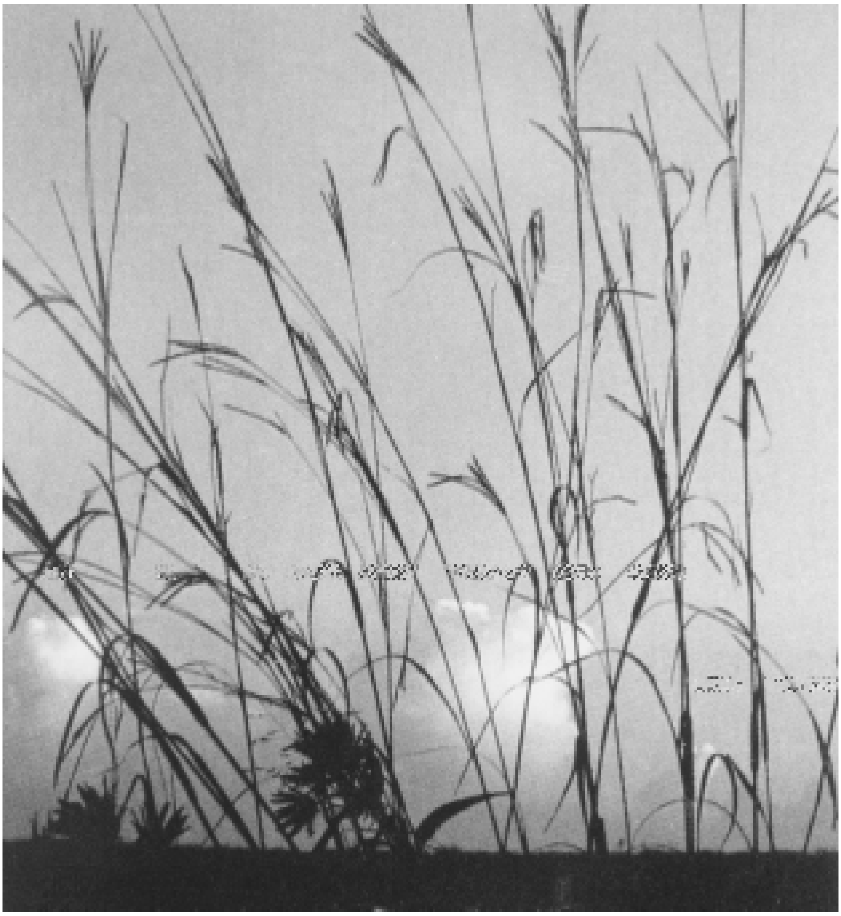
[44] For a discussion of the clash between the metaphysical (as postmodern) and scientific perspectives, see Michael E. Soulé and Gary Lease, eds., *Reinventing Nature? Responses to Postmodern Deconstruction* (Washington, D.C.: Island Press, 1995).

[45] James Krohe Jr., "Return to Native America," *Landscape Architecture* 82, no. 1 (1992): 45.

[46] Robert Thayer Jr., *Green World, Gray Heart, Technology, Nature and Sustainable Landscape* (New York: John Wiley and Sons, 1994), 54–55, comments on the weight of environmental guilt. Technology and our consumptive lifestyle has dramatically altered the American landscape in only a few short years, leading to a sense of remorse for the great destruction leveled by humans. This sense of guilt has been heightened and generally promoted during this environmental age.



4. Prairie image from discussion of Walnut Creek (from James Krohe Jr., "Return to Native America," Landscape Architecture *82, no. 1 [1992]: 45)*

a metaphysical and integrative perspective usually in keeping with postmodern philosophy, charging that restorationists narrowly focused on nature (lay perspective) appear oblivious to the fact that their work is as much about people as nature and that there are social consequences to the environmental agenda.[47]

Integration: Melding Natural and Human Communities. In many contemporary projects, nature and humans are seen as interconnected, existing in harmony and balance. The idea of building in accordance to nature is not new. Certainly McHarg's work at such places as Woodlands, Texas, is representative of this genre. Today, however, humans are increasingly spoken of as being both part of nature and natural in our own right. William Morrish and the late Catherine Brown of the Design Center for the American Urban Landscape, University of Minnesota, have argued for the artful melding of ecosystems and human communities. They, like other designers, regularly use the word *integration* to describe this balanced approach. Of a recent community design charrette site in Surrey, British Columbia, Morrish, Brown, and other design team members wrote that their approach was intended to " fuse nature and the city" in a new and provocative way.[48] The intent of the charrette was to create a sustainable community for both humans and the natural environment: "There are two ways to approach the question of landscape sustainability. You can use the design language of 'mitigation' and create some sort of benevolent buffer between nature and the city; or you can use the design language of 'integration' and try to fuse nature and the city. We chose to use the latter."[49]

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[47] Meyer, "Expanded Field of Landscape Architecture," 45–51, through a discussion of the tendency to see the world in binary pairs that separate humans and nature, offers a solid critique of the lay perspective from the metaphysical point of view.

In their design, the team sought to emphasize natural systems and processes. Stream corridors were left in place to stand as "green fingers" pushing into the site, facilitating natural drainage, providing wildlife habitat, and creating opportunities for human recreation. A parallel drainage system, or "water parkway," for runoff was designed to flow along the main surface of the boulevard of the community, becoming wider and more marshlike as it nears the Serpentine River (Fig. 5). In that way, the people of the community would see the processes of nature as a part of their daily routine. Of another Design Center project of similar intent, Adelheid Fischer wrote in *Orion* that the goal is to weave the "ecological strand more tightly into the fabric of the human community."[50] Clearly the focus of the work was to allow the processes of nature to continue mostly unimpeded and to bring humans into contact with those processes for educational purposes. In fact, in all of their work, Morrish and Brown have considered themselves "design educators in the civic classroom."[51]

How successful are these recent attempts in creating sustainable communities? The answer depends on the definition of sustainable development. Or, put another way, what is being sustained? Earlier perspectives on sustainable development were utilitarian and tended to concentrate on energy flows and perpetual economic viability. More recently, sustaining complex ecosystems and fostering biodiversity have been emphasized to a greater extent. From a scientific perspective, projects have shown considerable success in working with water—surface systems, recharging aquifers, removing contaminants—and nutrient flow. The whole realm of biodiversity is much more perplexing.

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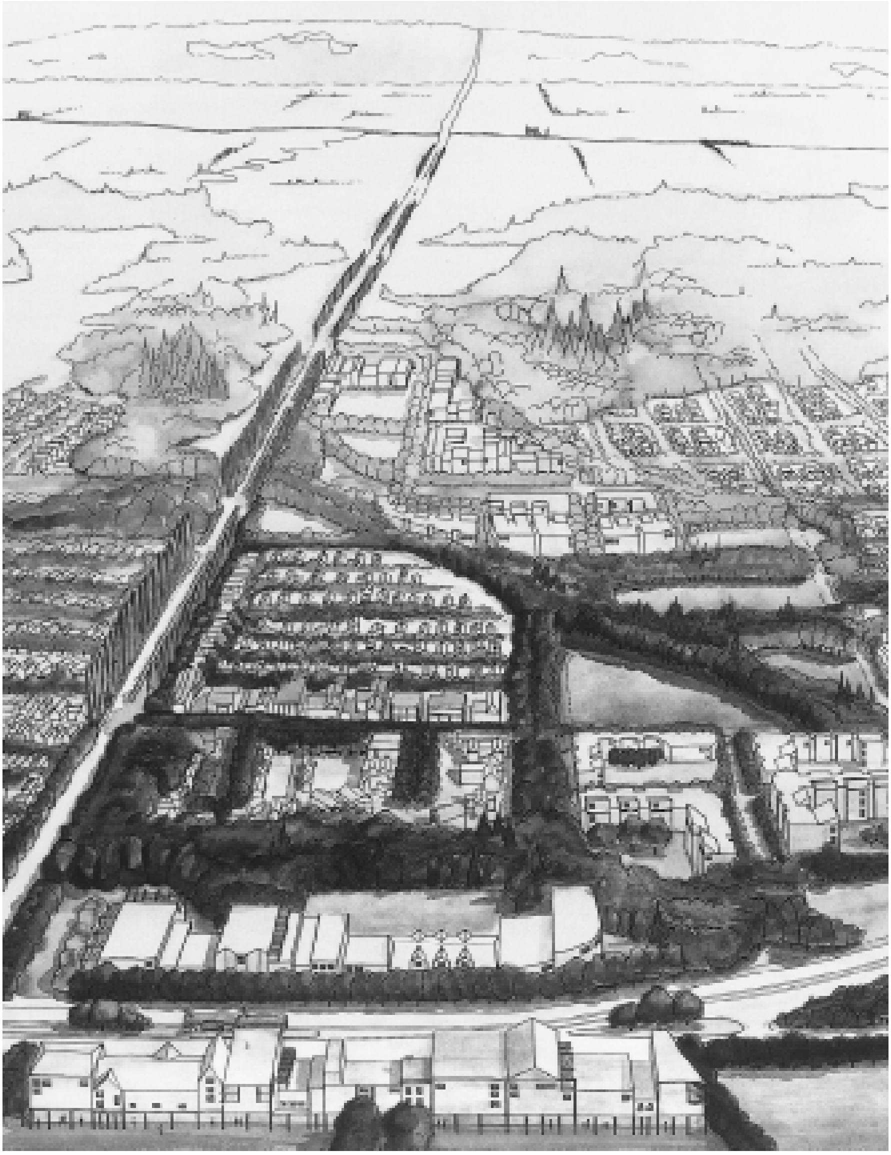
[48] Patrick M. Condon, ed., *Sustainable Urban Landscapes: The Surrey Design Charrette* (Vancouver: University of British Columbia, 1996), 63.

[49] Ibid.

[50] Adelheid Fischer, "Coming Full Circle: The Restoration of the Urban Landscape," *Orion* 13, no. 4 (1994): 28.

[51] Ibid.



5. Surrey community design concept by Morrish, Brown, and project team (from Patrick Condon, Sustainable Urban Landscapes: The Surrey Design Charrette *[Vancouver: University of British Columbia, 1996], 76)*

Scientists maintain that ecology is a complex business too easily oversimplified by the landscape architect.[52] In contemporary ecological theory, biodiversity is arguably the most prevalent and accepted concept. The applied ecologies (sometimes called synecologies)—landscape ecology, restoration ecology, and conservation biology—offer a great deal to the practice of landscape architecture. Landscape architects will search in vain, however, for any universal agreement. Restoration ecology and landscape ecology are generally more concerned with site-scale landscapes. Conservation biology, on the other hand, argues for the establishment or preservation of large, interconnected tracts of undisturbed landscape ("interregional") to ensure species diversity.[53] In other words, the conservation biologists would argue that the concept of integration as it is applied by landscape architects is more difficult (in some cases perhaps impossible) to accomplish. If significant species diversity is the goal, conservation biologists would prescribe a substantial buffer between the natural areas and human activity.

Scientists arguing from a realist perspective, then, are often critical of landscape architects, who articulate integration as the goal but whose work emphasizes education and the artful arrangement of landscape to the detriment of complex ecosystems. That is, when art, education, and public persuasion are raised to the forefront, more people are brought to sites that would function better with fewer people. From the realist perspective, the tendency to simplify or abstract the natural environment for the sake of clarity and effect can, in fact, run counter to various ecological objectives. The problem is most pronounced in community design projects that include ecological environmental rhetoric in promotional literature but in fact only create recreational green space that lacks any in-depth consideration of ecological systems.[54]

Environmental Commentary

Environmental fabrication and environmental art exhibit the potential strengths and weaknesses of public persuasion and artistic expression. These projects generally do not involve to any great extent the actual restoration, repair, or making of ecosystems. Environmental fabrication projects (fabricated spectacle) are often criticized for their tendency to blend various types of environmental rhetoric sophistically into evocative phrases that divert attention from the true focus of the projects. Environmental art projects usually do not pretend to repair the environment substantially. Landscape architects working in this genre wish to educate, inform, provoke, or debate environmental perspectives. Such designers are often faulted by those of the deep environmentalist position, who see their projects damaging the environment even as they encourage contemplation and debate on environmental issues.

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[52] For a number of years, ecologists believed that ecosystems tended toward equilibrium culminating in a perpetual climax state. But today "principles of 'balance' and 'order' have been replaced by the principle of 'gradation,' encompassing a continuum of human and natural disturbances, with varying degrees of stability and diversity." See Robert Cook's chapter in this volume and Don T. Luymes, Daniel J. Nadenicek and Kenneth R. Tamminga, "Across the Great Divide: Landscape Architecture, Ecology and the City," *Renewing the American City: Proceedings of the Annual Meeting of the American Society of Landscape Architects* 3, no. 1 (1995): 187–96. For a discussion of how the concept of biodiversity supplanted other conservation terms such as *wilderness* and *endangered species,* see David Takacs, *The Idea of Biodiversity: Philosophies of Paradise* (Baltimore: Johns Hopkins University Press, 1996), 41–99.

[53] Luymes, Nadenicek, and Tamminga "Across the Great Divide," 192; Takacs, *Idea of Biodiversity,* 5–8.

[54] That criticism has been leveled against Randall G. Arendt, *Rural by Design: Maintaining Small Town Character* (Chicago: American Planning Association, 1994). Criticism of that work likely led to another book with ostensibly a greater emphasis on ecology, Randall G. Arendt, *Conservation Design for Subdivisions* (Washington, D.C.: Island Press, 1996).

Fabricating Spectacle. Projects that fabricate spectacle include theme parks, shopping mall wilderness experiences, zoos, and corporate landscapes.[55] Michael Howlett and Rebecca Raglon have demonstrated the extent to which, through green advertising, "business in contemporary North America is now attempting to portray itself as an environmentally friendly citizen," diverting attention away from process and product to the acceptable "corporate image."[56] A similar form of public discourse occurs in the design and construction of the corporate landscape. Corporations over the last several years have appropriated environmental rhetoric in support of didactic naturalistic landscapes surrounding their corporate headquarters.[57] In painting this green image, the tendency is for the corporations, together with the landscape architects they employ, to use all categories of environmental rhetoric in a slurry of buzzwords and sound bites. A few catch phrases related to the deep environmentalist perspective are linked with words suggesting harmony and integration and others that suggest the legitimacy of science.

One example of this tendency is Prairie Stone, a huge Illinois business park designed by the Johnson Johnson and Roy Corporation (JJR) for the Homart Development Corporation, a subsidiary of Sears Roebuck and Company. While it exhibits some attempt at ecological sensitivity, the land is, in fact, heavily developed. In the center of the 786-acre landscape is an isolated 80-acre parcel called the Central Preserve bisected by a rail line.

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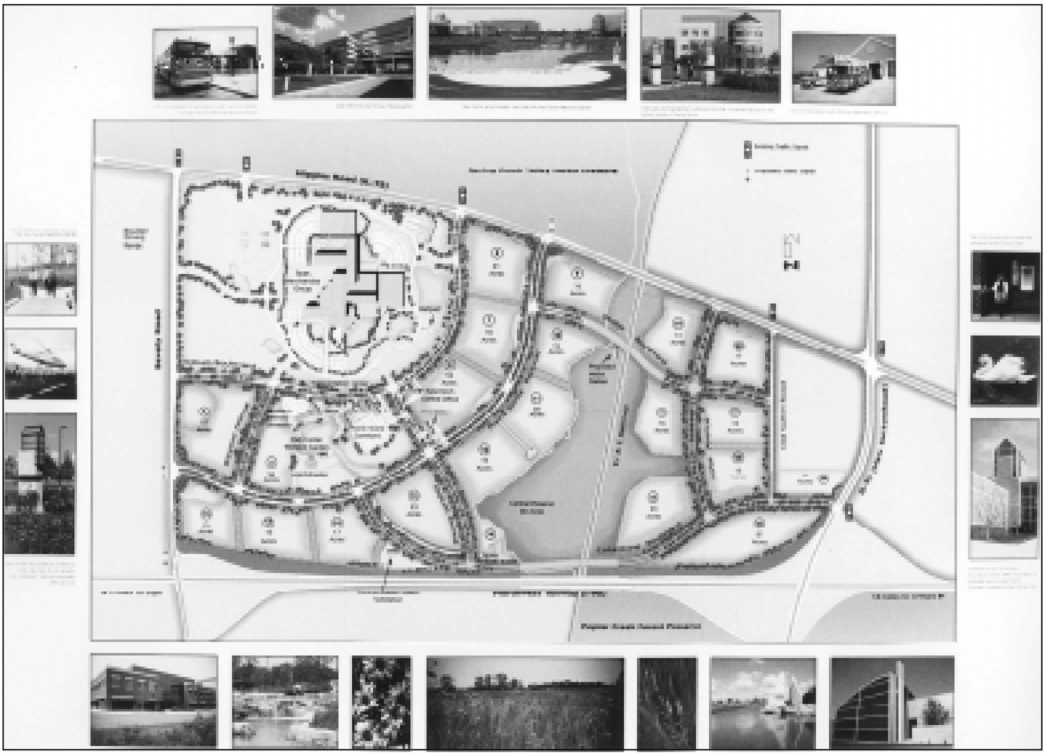
[55] The designers of zoos, John Coe and others, regularly use all categories of environmental rhetoric in support of their projects. Coe has argued that visitors need to be removed from humanity to see nature on nature's terms. The idea of modern zoo design is to emulate animal habitats vividly and to make people feel as though they are invaders. Zoo designers claim a close connection to the land ethic articulated by Aldo Leopold and a desire to communicate one "inviolate premise: Earth is not the sole province of man." Coe and others claim a passion for biodiversity and a high regard for the "interrelationship of all things." Elizabeth Powell, "Gardens of Eden," *Landscape Architecture* 87, no. 4 (1997): 82. While it is possible to understand some of those ideas by visiting a zoo, visitors should be reminded that the landscape, despite rhetoric to the contrary, is not reality, but a type of virtual reality intended as spectacle.

[56] Michael Howlett and Rebecca Raglon, "Constructing the Environmental Spectacle," *Environmental History Review* 16, no. 4 (1992): 53–68.

[57] Jory Johnson, "Pastures of Plenty: Thirty Years of Corporate Villas in America," *Landscape Architecture* 80, no. 3 (1990): 54–57. Johnson comments that by "carefully nurturing the environment, saving trees, and building nature trails, corporations strive to demonstrate their commitment" to public welfare and the environment. The article presented images of corporate buildings set amid seas of native grass—all examples of a constructed nature as a gesture of goodwill and environmental philanthropy. McDonald's corporation, for example, encourages people to fish in its lakes and hike along "McNature trail."



6. Plan of the heavily developed Prairie Stone (from Prairie Stone *[Chicago: Homart Development Company, 1992])*

Other areas such as the Wetland Garden and various water features are only representations of natural processes. The remainder of the site includes lots for the various mega-businesses Sears is attempting to attract. The Sears Merchandise Group headquarters already occupies 200 acres of the site (Fig. 6). From the promotional material, much of it written by JJR marketing "experts," it is clear that Sears is trying to shed its Sears Tower image as it engages the countryside. It is also attempting to capitalize on the idea of naturalness as it sells land in the development. In the promotional literature, advertising, and project descriptions is the language of deep environmentalism, preservation, integration, and ecological science, but the words are either entirely intertwined or presented as sound bites. For example, the description of the master plan proclaims that Prairie Stone is a "native landscape" providing for an "environmentally balanced harmony between man, nature, and technology."[58] "Environmental balance" connotes sound ecological practice, and "harmony between man and nature" suggests the importance of integration. The word *native* has associations with both deep environmentalism and preservation environmentalism. In advertising, words like *earth, environment, nature, balance,* and *preservation* are featured prominently. This language is clearly about sales over substance, and as such qualifies as sophism, not rhetoric.[59] The sophism is exacerbated by Sears's outward migration from the city and the intent to develop heavily in the exurban landscape. The corporation, in replacing a portion of the rural landscape with a pseudo-ecology, perhaps also used environmental language in an attempt to assuage accountability.

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[58] *Prairie Stone* (Chicago: Homart Development Company, 1992), a plan and promotional literature for Prairie Stone.

Environmental Art. A potpourri of environmental phrases is also consistently found attached to environmental art projects. As defined here, environmental art designates those projects that attempt to educate or inform visitors about ecological systems, natural connections, the human place in nature, the damage humans have done to the environment, the wonders of natural events, and so forth without any pretense of preserving, restoring, or sustaining the environment.

One project that has garnered considerable discussion is George Hargreaves's Byxbee Park. The park was built on the site of a landfill to heighten environmental awareness. In that landscape, a methane flame glows as a symbolic gesture to the decomposing garbage below, rounded earth forms suggest the effects of the wind and the legacy of Native American culture, and native grasses cover much of the site (Fig. 7).[60] Environmental rhetoric accompanies these and other similar projects. Designers speak of the potential of their designs for conveying a lesson about the interconnectedness of nature and humans and the need to respect the natural environment on its own terms. One commentator on Byxbee Park declared that the design informs visitors about "mankind's ability to better inhabit the earth" and suggested that one might leave the place with a "heightened awareness of natural process"—even a potentially new "enlightened ethic."[61]

Environmental artists and garden designers are often more realistic about what they might accomplish than many restorationists and community designers. On the surface, they claim only a didactic purpose without suggesting that their work will ameliorate environmental damage directly. Sometimes, however, the designers do not make that distinction clear enough.

A 1996 issue of *Critiques of Built Works of Landscape Architecture,* published by the School of Landscape Architecture at Louisiana State University, casts light on this topic since three

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[59] That rhetoric can be found in an advertisement "Where Business Gets Down to Earth," *Chicago Tribune,* 25 September 1991 and in a pamphlet *Native Landscape* (Chicago: Homart Development Company, 1992).

[60] Reuben Rainey, "Environmental Ethics and Park Design: A Case Study of Byxbee Park," *Journal of Garden History* 14, no. 3 (1994): 171–78; Rachel Winslett Evans, "The Creation of Byxbee Landfill Park," *Critiques of Built Works of Landscape Architecture* 3, no. 1 (1996): 16–18.

[61] Rainey, "Environmental Ethics," 174, 178; Deborah L. Gerard, "Moralistic Eco-Fundamentalism: A Case Study of Byxbee Park," *Critiques of Built Works of Landscape Architecture* 3, no. 1 (1996): 22.

7. *Byxbee Park (from* Hargreaves: Landscape Works, *Process Architecture 128 [Tokyo: Process Architecture, 1996], 110)*

of the critiques are of environmental art projects.[62] Criticism of these projects came from two perspectives. First, critics suggested that in many cases the design message was opaque and that visitors would never understand the complex environmental perspective presented in the design. Second, the reviewers contended that the designs often sent dual messages. Deborah Dalton, for example, argued that environmental art projects often require heavy maintenance and the use of harmful herbicides and pesticides to keep the intended environmental message alive.[63] The critics found it ironic that projects exalting a land ethic should cause ecological damage even beyond the site itself. Criticism of these projects often came from the deep environmentalist perspective related to the ASLA's stand on environmental ethics. Because landscape architects are to contribute to the ecological health of the planet, environmental art intended to provoke rather than repair is often regarded as unprofessional, if not unethical.

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[62] Deborah W. Dalton, "Natural Illusions: A Critique of the Ecological Values and Expression of Some Designers and Public Artists in the Urban Landscape," *Critiques of Built Works of Landscape Architecture* 3, no. 1 (1996). In this issue, Dalton comments on several environmental art projects, while Rachel Evans's and Deborah Gerard's essays both critique Byxbee Park from different perspectives.

[63] Dalton, "Natural Illusions," 8.

This survey of landscape architecture projects and their accompanying messages shows that projects of amelioration and of commentary represent distinct attitudes toward the relationship of humankind to the natural world. Language from the four strains of anthropocentric environmental rhetoric, however, is used indiscriminately, both to sell the projects and to critique them, occasionally to the point of sophism.

Artful Engagement

The environmental rhetoric of landscape architecture is often left unfulfilled by the work because of a "Tower of Babel" effect—landscape architects speaking different languages of environmentalism when they examine and critique each other's work. We have illustrated how the four types of environmentalism—deep, preservation, integrative, and ecological—have become entangled in the professional canon of the ASLA and sometimes in discussions of individual projects such as Prairie Stone. In other cases, the major criticism of a project comes from a strain of environmental rhetoric different from the one used in support of the project—restoration projects with a preservation perspective are critiqued from an integrative environmental position, integrative projects are critiqued from an ecological environmentalist point of view, and so forth. Understanding the sources of those divergent perspectives provides considerable potential in lessening confusion and misinterpretation.

Misunderstanding grounded in those various environmental perspectives, however, is only part of the problem. Future research should focus more deeply on the motivation for the environmental rhetoric selected by designers and clients to describe their own projects. For example, further exploration of the rhetoric associated with Prairie Stone might reveal that the corporation and designers justified their sophistic statements simply because they were outwardly engaged in marketing: to sell a good design, it is necessary to use the "right" words.

Certainly, environmental rhetoric is often employed for promotional purposes in more subtle ways than at Prairie Stone. Carol Franklin, a principal with Andropogon Associates, has zealously communicated the moral charge behind the firm's agenda: "We don't have time to debate about styles, about fashions," said Franklin, "They are irrelevant to the survival of the diversity of the planet." [64] As we have argued, environmental advocacy (environmental evangelism) in landscape architecture originated during McHarg's early influence. The focus on the environment during those years offered a great opportunity for landscape architects (designers of "nature") to highlight their work to the public. How landscape design might solve an environmental crisis was less clear. McHarg could never articulate the aesthetic principles that drove his designs.[65] The words did not fit the work because the words were often about saving the planet and developing sites. Laurie Olin has commented on that divide:

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[64] Carol Franklin, quoted by Frederick Steiner and Todd Johnson, "Fitness, Adaptability, Delight," *Landscape Architecture* 80, no. 3 (1990): 97. In another context, Franklin suggests that clinging to art and a "horticultural-based landscape aesthetic, while the environment falls apart ... is like rearranging the deck chairs on the Titanic." Paul Roberts, "Is Sustainable Attainable?" *Landscape Architecture* 84, no. 1 (1994): 61.

> Most of what is wrong with the environment today I can do very little about. The forces that prevail upon the ecosystems and much of the urban infrastructure have next to nothing to do with my work or the work of my peers. The problems of the larger environment derive from flagrant abuses of resources, from poor and ignorant government policy, and from systematic problems related to things ranging from packaging policies and dietary habits to the economics of the agriculture and defense and transportation industries. The scale of the problem facing us is beyond the scope of individual site designers.[66]

That separation of words and work born during McHarg's influence has not disappeared. Franklin, in employing the language of deep environmentalism to highlight Andropogon's accomplishments, simultaneously emphasizes the firm's environmental commitment and trivializes its work. Andropogon is very concerned with the art of design. Like other landscape architecture firms, it designs landscapes to provoke an emotional response, encourage intellectual debate, and educate visitors—all with a specific focus on the environment. In a similar manner, the words associated with the Walnut Creek project emphasize environmental amelioration on a large scale, though the purpose of environmental education through thoughtful design reads like a footnote. In reality, the larger context of farms and communities ensures that Walnut Creek will never function as a native prairie; it will always be dependent on human maintenance. Walnut Creek, then, is a large garden, but with potential to stir the imagination through the art of design.

Landscape architects can and arguably should uphold a strong environmental ethic in their work. The question is what can they reasonably accomplish? When the profession evolved during the nineteenth century in the United States, landscape architects actively participated in the pressing debates of the age through the artful manipulation of landscape elements.[67] If that history represents the true heritage of the profession, perhaps it is in the art of design that a common ground ultimately exists for everyone in the profession who professes an environmental agenda.[68] That does not mean that all landscape architects must be relegated to designing only small-scale environmental art projects. Joan Nassauer, a

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[65] McHarg felt uncomfortable discussing aesthetics. Interview with Anne Whiston Spirn, 16 May 1998. McHarg also confused the aesthetic approach of the English Landscape School with ecological design. McHarg, *Design with Nature,* 72–73.

[66] Laurie Olin, "The Great Metaphor," *Landscape Architecture* 86, no. 12 (1996): 63.

[67] Luymes, Nadenicek, and Tamminga, "Across the Great Divide," 187–90.

[68] Despite landscape architecture's history as a design art, the environmental canon of ASLA does not address the potential for engaging in environmental debate through design. While the "Declaration" does address the importance of education, the focus is on advocacy and political action.

University of Michigan landscape architect and landscape ecology advocate, has argued that landscape architecture is well suited to educate people about landscape ecology. She maintains that "invisible ecological function must be actively represented for human experience if human beings are to maintain environmental quality." [69] Similarly, Morrish, Brown, and the other team members of the Surrey site sought to act "as design educators in the civic classroom" by emphasizing hydrological processes through the artistic manipulation of landform and vegetation. In the introduction to *Sustainable Urban Landscapes: The Surrey Design Charrette,* Patrick Condon suggests that in dealing with environmental problems the profession of landscape architecture is best employed to "provide the pictures" and pique interest in a sustainable future.[70] While providing the pictures appears on the surface to be a very humble role, it empowers the profession to do what it does best—artfully engage the public.

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[69] Joan Iverson Nassauer, "Messy Ecosystems, Orderly Frames," *Landscape Journal* 14, no. 2 (1995): 163.

[70] Condon, *Sustainable Urban Landscapes*, 12.

Constructions of American Forest: Four Landscapes, Four Readings

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Paul Kelsch

Buster Simpson has a dilemma. His public sculpture *Host Analog* in Portland, Oregon, is not growing as planned. *Host Analog* is a huge douglas fir log, which Simpson placed outside Portland's convention center, where it would "nurse" seedlings from Oregon's old-growth forest and symbolize connections between the forest and the citizens of Portland. Though the seedlings are growing quite well, the log is being enveloped by other vegetation that has seeded itself in around it. Simpson is unsure what to do. Should he allow the other plants to grow, or should he cut them out? All of them, or just some? As he put it: How much should he "play God"? [1]

Simpson's dilemma, whether or not to intervene in nature, is the crux of environmental decisions in landscape architecture. It is bound up in conceptions of nature and of relationships between nature and society. Much of the emphasis of environmentalism in landscape architecture stems from the belief that nature is a stable ground against which human actions can be judged. Recent scholarship, however, has shown that nature is culturally constructed: it is not a universal "other," and it is not the same thing to all people.[2] This recognition challenges some of the basic premises of the environmental movement and opens it to criticism. Such criticism can serve to strengthen the theoretical basis of the movement and imbue landscape architecture with a broader understanding of the role of nature in society and its expression in landscapes.

This paper is a step toward theorizing an "inventionist" environmentalism within landscape architecture, while not denying the value of more traditional approaches. Frederick

I wish to express my gratitude to my fellow "landscape surgeons" at Royal Holloway College, University of London, to Michel Conan, and especially to Denis Cosgrove for their comments and criticism of this work as it evolved.

[1] Buster Simpson, conversation with author, 7 September 1997. After reviewing a draft of this chapter, Simpson claimed that he had not been perplexed by the vegetation, but fascinated by what would happen. My notes confirm that he was "in a quandry" (his expression) at the time. In any case, by May 1999, when I next spoke with him, he had decided to let the vegetation grow. I have chosen to leave the text as is, since Simpson's dilemma is primarily a narrative device.

[2] William Cronon, ed., *Uncommon Ground: Rethinking the Human Place in Nature* (New York: W. W. Norton and Company, 1996); Neil Evernden, *The Social Creation of Nature* (Baltimore: Johns Hopkins University Press, 1992).

Host Analog*, summer 1997*

Turner identified ecological invention as one of four strands of environmentalism in the United States (the others being conservation, preservation, and restoration). In his eyes it raises restoration ecology to an art form, revealing "some unique set of insights about our nature and relation to the rest of nature."[3] This is not a unique concept; it echoes Laurie Olin's claim that historically one of the central themes of landscape architecture has been the relationship between society and nature.[4] Still the question remains: What *are* relationships between society and nature today and in particular how do landscape architects construct those relationships in designing and managing landscapes?

Nature is a rich and complex concept, one that demands varied responses, particular to given situations. What I envision is a flexible or versatile environmentalism in landscape architecture that recognizes and openly engages in multiple kinds of intervention.

To investigate this, I examine four forests—two large "wild forests" and two tiny urban "art forests"—which differently frame Simpson's dilemma of how and why to intervene in nature. These four forests exaggerate the kinds of decisions that landscape architects make. The wild forests are managed, though with the intention of making the management decisions invisible. The art forests are conspicuously designed, but they are so small they remain art objects. Though landscape architects rarely manage wilderness areas or design art installations, the decisions made in each of these four extraordinary landscapes are similar to the decisions made in more ordinary situations.

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[3] Frederick Turner, "The Garden and the Bee: Restoration as Natural Reproduction," *Conference Proceedings: Council of Educators in Landscape Architecture* (1992): 4:1–7. Unfortunately, Turner sees the realization of inventionist ecology in the colonization of other planets, which to my mind is too fanciful and more limiting than the term *inventionist ecology* need imply.

[4] Laurie Olin, "Form, Meaning and Expression in Landscape Architecture," *Landscape Journal* 7, no. 2 (1988): 149–68.

I read these forests from four perspectives—metaphors for understanding nature, ecological explanations of forest succession, the experience of nature, and constructing the American presettlement forest. This categorization is intuitive. It comes from my own awareness of forests, beginning with forest ecology and further developing through environmental psychology, landscape art, and now cultural geography. The categorization parallels, however, three important discourses within landscape architecture—ecology, experience, and symbolic communication.[5]

Cultural Metaphors for Nature

Nature as Wilderness

Simpson's concern that to cut out the vegetation surrounding *Host Analog* would be to "play God" is surprising, given how much he overtly constructed this would-be forest. He selected the log from an old-growth forest in the watershed that supplies Portland's drinking water. He had it cut into eight segments, arranging them on raised terraces of crushed volcanic rock, and he constructed an irrigation system that mists the log at regular intervals. The log arrived with seedlings already sprouted on its bark, but many died and had to be replanted in small holes drilled in it. Now many are thriving, thanks to Simpson's care. Yet he seems to see his actions as being unnatural, most likely an influence of the "wilderness metaphor" for nature.

Metaphors influence what we see as nature and how we act toward it: wilderness nature is devoid of people, and human actions violate its "virginity."[6] Wilderness is the motivation behind the creation of national parks, wilderness areas, and nature preserves—all hallmarks of the American environmental movement—but it is also the motivation behind the removal of people, such as Native Americans when the land was first colonized and "inholders" in national parks, to *create* pristine landscapes. The wilderness metaphor is but one way of understanding nature, yet it is one that denies alternative understandings. Significantly, it is the dominant metaphor of the American environmental movement. It appears in unbending, hands-off, environmental arguments, such as that to preserve

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[5] Catherine Howett, "Sign, Systems and Sensibilities: Sources for a New Aesthetic," *Landscape Journal* 6, no. 1 (1989): 1–11.

[6] William Cronon, "The Trouble with Wilderness," in *Uncommon Ground,* 69–90.

Connecticut's Cathedral Pines, a much-loved forty-two-acre stand of two- and-three-hundred-year-old white pines, even after it was destroyed in 1989.[7]

On a muggy afternoon in July of that year, the sky over Cornwall, Connecticut, turned dark and then green as two tornadoes converged on the village, felling most of its trees and damaging much of the surrounding forest. Among the casualties was Cathedral Pines. Growing on a hillside immediately east of the village, the pines were a national landmark, known around the state and the region. Their loss was felt deeply by the townspeople and others around the state, who memorialized them in poems, quilts, concerts, drawings, and even on T-shirts.

Much debate followed over what to do with the fallen trees. The townspeople were concerned about public safety (the threat of fire), economics (the waste of the valuable timber), and aesthetics (cleaning up the mess). The Nature Conservancy, owners of the property, wanted to leave the land alone and let the trees decay naturally. The organization was concerned about soil erosion from a salvage operation, and it wanted to study forest regeneration at such a unique site. In the end, it compromised, clearing a fifty-foot swath at the edges of the property as a fire buffer and letting the remaining trees lie. All other proposed uses of the timber were prohibited, even to the extent that a fallen tree that straddled the property line was only allowed to be removed up to the Nature Conservancy's boundary.

The Cathedral Pines controversy illustrates the failings of the wilderness metaphor. By depicting all human actions as violating nature, the metaphor is unable to distinguish between different kinds of intervention. "If you're going to clean it up," wrote one purist advocate of the Nature Conservancy's position, "you might as well put up condos."[8] "Wilderness" gives us no clues about how to behave in the nonpristine environments in which we live, and it masks the very real human history of a place like Cathedral Pines.

Cathedral Pines was not a pristine, "virginal" landscape. Though it is unclear how white pines of two distinct ages seeded in, the site apparently had been cleared once by early white settlers and perhaps cut again later. It became property, was surveyed, and eventually was purchased by the Calhoun family in 1883 to protect it from further logging. Foresters felled a few of the trees in 1945 as an experiment to see if they could help the pines stave off competition from hemlocks, which were slowly replacing them. In 1973 the Calhouns deeded it to the Nature Conservancy, and it was declared a national landmark in 1982. A plaque was mounted near the Tree on the Rock, the symbol of Cathedral Pines to the local residents. Children played in the woods, and families picnicked there. A local road went through the stand, as did the Appalachian Trail, the latter receiving regular maintenance and lots of hikers. Today the remaining trees are numbered with small metal tags for research purposes. Yet all of this human history is overlooked by the wilderness metaphor that casts the landscape as pristine and inviolate.

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[7] Michael Pollan, "The Idea of a Garden," in *Second Nature: A Gardener's Education* (New York: Dell Publishing, 1991), 209–38.

[8] Pollan, "Idea of a Garden," 211.

Blowdown in the Five Ponds Wilderness Area, summer 1997

Knowing the human history of a place like Cathedral Pines or *Host Analog* does not necessarily make decisions about how to intervene easier. But in masking the history of the forest, the wilderness metaphor strips away much of the richness of association that gives it meaning. Much of the appeal of actual wilderness areas derives from human associations and from the historical context in which they are known. By constructing nature as "other," the wilderness metaphor conceals the very associations that make it important to us.

Nature as Garden

Six years after the tornado destroyed Cathedral Pines, another windstorm swept across the Adirondack State Park in northern New York, damaging about one hundred thousand acres of forest. The storm hit hardest in the Five Ponds Wilderness Area in the northwestern part of the park, a remote region described as "the frontier" of the Adirondacks.[9] Five Ponds is best known for having the largest tract of unlogged forest in the eastern United States, an area of about fifty thousand acres, roughly half of the designated wilderness area. As at Cathedral Pines, this storm generated a great deal of controversy about what to do with the downed timber, and again as at Cathedral Pines, the timber was left to decay. No controversy ensued, however, over the decision to clear away the downed trees from trails and campsites. The wilderness metaphor curiously turns a blind eye to such activities, even though this landscape quite closely approximates "true" wilderness.

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[9] Barbara McMartin, *Discover the Northwestern Adirondacks: Four-Season Adventures through the Boreal Forest and the Park's Frontier Region* (Woodstock, Vt.: Backcountry Publications, 1990).

A better metaphor to explain such a response, and one that I suggest is more appropriate for landscape architecture, is the metaphor proposed by Michael Pollan of nature as garden.[10] Pollan is an avid gardener; for him gardening is not an act of imposing one's will on the landscape but of interacting with the forces of nature.

The garden metaphor yields expressly different kinds of behaviors and attitudes than the wilderness metaphor. It provides local rather than universal answers, accepting the contingency that characterizes local conditions. It accepts anthropocentrism as inevitable, yet recognizes humans' dependence on other forms of life for health and survival. Accordingly, it values and nurtures the wildness of other life forms, including the wildness of soil, water, and air. The garden metaphor does not romanticize nature and believes that humans have a legitimate quarrel with weeds, pests, storms, and so forth. The quarrel must not be "won," however; too heavy a hand in wiping out pests, for example, can have unforeseen consequences, as happened with DDT. The garden metaphor is able to make distinctions between kinds of human intervention and often uses the workings of nature as the model for that intervention. And yet it recognizes that culture is as important a part of the garden as nature. "As Wendell Berry has pointed out," writes Pollan, "it is culture, and certainly not nature, that teaches us to observe and remember, to learn from our mistakes, to share our experiences, and perhaps most important of all, to restrain ourselves."[11]

The garden metaphor does not seek to manicure all of nature: it merely admits the human presence in much of what we think of as wilderness. From this standpoint the New York State Constitution itself can be seen as an act of gardening. Article XIV, section 1, contains the toughest wilderness legislation in the United States. Written in 1894, it reads simply: "The lands of the state, now owned or hereafter acquired, constituting the forest preserve as now fixed by law, shall be forever kept as wild forest lands. They shall not be leased, sold or exchanged or be taken by any corporation, public or private, nor shall any timber thereon be sold, removed or destroyed."[12]

What is interesting, though, is the language and the reasons given for interpretations of Article XIV through the years. Rulings allowed cutting less than 350 trees (not "an unconstitutional amount") for the purpose of adding new parking areas (1993). Construction of trails was deemed acceptable, as long as tree cutting was "consistent with wild forest lands," because the intent of the framers of the Constitution was not to prohibit use of the lands, but to allow them to revert to their natural state without human interference (1991). Cutting browse for the purpose of feeding wild deer was ruled permissible (1948), and so was removing an immaterial amount of tree growth for the purpose of opening vistas or

[10] Pollan, "Idea of a Garden," 225,

[11] Pollan, "Idea of a Garden," 232.

[12] *McKinney's Consolidated Laws of New York,* book 2, *Constitution Articles 3 to End* (St. Paul, Minn.: West Publishing, 1997).

views (1935). However, removing dead trees for aesthetic reasons alone was prohibited (1933). It was the duty of the Conservation Department to remove dead stubs if they became a menace to safety and to life (1935). Fire roads were permitted to protect the forest preserve from fire (1935), as long as they did not destroy the wild forest character of the preserve to a substantial extent (1955).[13] The point here is not to suggest that these rulings are or are not appropriate, only that they are indeed human decisions that affect nature and are better seen as acts of gardening, with the intention of creating a "wilderness garden," than overlooked or deemed not to exist. Only then can they be discussed for what they are, evaluated in light of other decisions. Clearing the trees is *not* the same as putting up condos. The metaphor of the garden allows for such discussion to be engaged.

Nature as Community

Alan Sonfist's *Time Landscape*™ re-creates the precolonial forest of Manhattan.[14] It is a narrow rectangular plot of forest surrounded by a wrought-iron fence and labeled with a sign identifying it as an artwork. The small site (45 by 180 feet) in Greenwich Village was planted in 1978 with young trees intended to grow into a facsimile of the precolonial forest. The plantings construct different representations of the forest. The southern end of the site is an early successional forest of cedars, birches, witch hazel, sassafras, and one apple tree. A beech grove dominates the center part, recalling a similar historic grove in that part of Manhattan, recorded as a favorite lunch spot on fishing expeditions to a nearby stream. The northern part consists of a stand of mixed deciduous trees dominated by oaks, ashes, and elms. The largest elm is twelve inches in diameter after nearly twenty years of growth.

Sonfist grew up in the Bronx and as a child played in the nearby Hemlock Forest, a descendent of New York's precolonial forest. He believes everyone should have the opportunity to experience a forest and foster his or her own memories, thus *Time Landscape*™ is as much about making a place where people today can experience a forest in the heart of Manhattan as it is about reclaiming part of New York's history. In this regard, Sonfist's creation seems to be working. *Time Landscape* ™ has a rather devoted following among a variety of people, though they have different kinds of attachments to the place. The most devoted supporter right now is Wilhelmina Hellman, a sixty-two-year-old German immigrant, who voluntarily cares for the project, gradually pruning out non-native species and planting native ones. Her decisions about what to leave and what to pull out are very personal, but there is no question that she is having a significant impact on the forest. Many people thank her for caring for it, though one man told her that she shouldn't be there because the site is supposed to be "natural." When the project was first planted, members of the community contributed an apple tree, which Sonfist accepted, even though it is not native. "It's part of the human ecology," he explained.[15] Some of the older residents in the area feed the squirrels; one even put up a feeder for them, though Sonfist removed it. Once

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[13] *McKinney's Consolidated Laws of New York.*

[14] The title *Time Landscape* is a protected trademark.

[15] Alan Sonfist, conversation with author, 16 September 1997.

Sonfist tried to convince a Parks Department employee not to rake up the fallen leaves. The man replied that he likes the forest to "look nice" when he brings his son to see it. Sonfist didn't argue. One passerby was ecstatic about the project. She said, in a thick New York accent, "This is one of the best places in New York—and nobody knows about it. I tell all my friends to come see it." A class of art students came by to see it as part of a walking tour of public art. Ironically, despite the devotion that the project receives from its public, it is virtually ignored by ecologists and by New York's governmental institutions.

The various attachments described in these anecdotes, some of them contradictory, are consistent with the metaphor nature as community. The community metaphor emerged from the environmental justice movement in the 1980s and stresses the interactions between different species and individuals. Community, in this sense, is not a "unity of sameness," as it has been defined traditionally in sociology, but a "unity of difference" stressing the interrelationships between different members of the community. "This idea of community presupposes connection to and interconnectedness with other groups, other species, and the natural environment through everyday experiences with family, comradeship, and work."[16]

That members of the community have different relationships with nature accounts for differences in opinion on environmental decisions. In the Adirondacks, for example, loggers did not want to waste the downed trees after the storm and thus opposed the decision to let them rot. Their viewpoint is often depicted by environmentalists as motivated by greed, but it also can be seen as a different ethic motivated by the particular relationship that loggers and foresters have with trees. Forestry is a resource-based industry: the trees are capital. Quite simply, for a logging company to get more money, it has to cut down more trees. This is not an abstract economic relationship. The most important decisions are concrete—which trees to leave standing, which to cut down, and at what rate? Debate about what constitutes "good" forestry focuses on issues of biology and economics, but these are very complex relationships. It involves "making decisions daily about how to manage trees that they raise over decades to sell into markets that change by the week."[17] David Dobbs and Richard Ober describe the close relationship of one Vermont forester-farmer to his sugar maples, after tapping them for syrup for more than fifty years:

> Making syrup, then, was part of a calculated plan. It was also a dream, for in a family that loved trees, Bob Moffatt came to especially love the maple. One of Larry Moffatt's early memories is of his father showing him a maple tree, pointing out its distinctive bark, the shape of its leaves, the way it rose to a high crown. His father told him it was a sin to fell a maple unless you'd thought carefully about what you wanted it for and weighed that against what the tree might become. If you were careful not to tap it

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[16] Giovanna di Chiro, "Nature as Community: The Convergence of Environment and Social Justice," in Cronon, *Uncommon Ground*.

[17] David Dobbs and Richard Ober, *The Northern Forest* (White River Junction, Vt.: Chelsea Green Publishing Co., 1995), 224.

> too heavily, a maple could produce a sweet, salable product while it grew into lumber. And even the worst maples made good firewood.
>
> And they were beautiful.[18]

Certainly not all loggers and foresters have such poetic associations with trees. But this anecdote suggests a level of attachment that is often overlooked in environmental debates. The community metaphor seeks to acknowledge such attachments.

Unlike the metaphor of nature as wilderness, the metaphors of nature as garden and community are not universal; they construct nature in ways that seem appropriate to landscape architecture. The garden metaphor acknowledges the creative role of individuals in "authoring" nature, while the community metaphor reminds us that our relationships with nature are not necessarily the same as those of our clients and other inhabitants of nature.

Ecological Explanations of Forest Succession

The vegetation growing on and around *Host Analog* is an odd mixture of species. In addition to the forest plants that came with the log, the installation includes oaks, grasses, and open field plants, typical of drier sites, and willows, cottonwoods, and horsetails, typical of wet, sunny sites. One year even a tomato grew and produced fruit.

In deciding how to respond to this assortment of plants, Buster Simpson may well turn to forest ecology for a prediction of how the vegetation will evolve and for advice as to what he should do. Vegetation development is the subject of succession theory. Yet, while predicting succession is a scientific matter, it does not determine what Simpson *should* do: that is a value judgment. But often, ecology, as "the voice of environmentalism," is presumed to answer both questions. The history of succession theory itself shows that a political mandate to preserve "unspoiled" nature is in fact embedded in its formation. Although this view of nature has been undermined by subsequent scientific evidence, its legacy persists. In what follows I criticize that legacy, not to discredit the scientific basis of succession theory but to open the associated value judgments to alternative discourses of nature.

The first comprehensive theory of plant succession was formulated by Frederick Clements in the early twentieth century.[19] Clements was born in Nebraska when it was first being settled. The vast prairies were still intact but were being rapidly plowed under. He saw these extensive grasslands as a "community," a higher-level organism and a fundamental unit of nature. Vegetation progressed through a series of stages, each stage preparing the way for the next and culminating in a "climax community," the single community best adapted to its climate. Plowing the prairie, in Clements's view, destroyed an organism that had evolved to fit its environment perfectly.

Britain's A. G. Tansley objected to Clements's idea that there was only one climax community and that it was determined only by climate.[20] He argued that factors other than

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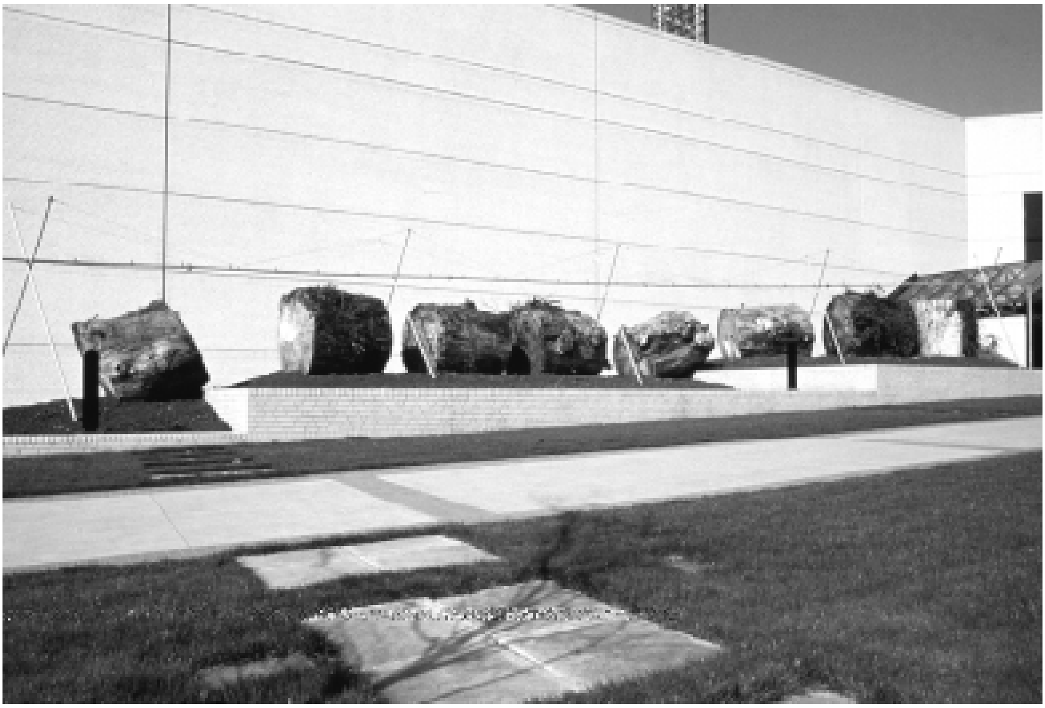
[18] Ibid., 180.

[19] Donald Worster, *Nature's Economy: A History of Ecological Ideas,* 2d ed. (Cambridge: Cambridge University Press, 1994); Michael Barbour, "Ecological Fragmentation in the Fifties," in Cronon, *Uncommon Ground.*

[20] Worster, *Nature's Economy,* 239–40.



Host Analog, *at the time of construction, ca. 1991 (photo: Eloise MacMurray)*

climate created other climax communities, most notably an "anthropogenic climax," which was created or strongly influenced by human activities. In England, with its centuries-old agricultural community that was as stable as the prairies, an ecology based on the study of primeval nature made little sense. But on the American frontier, the assumed opposition of civilization and nature was built into Clements's theory. When the Dust Bowl devastated the plains in the thirties, Clements's ideas were drawn upon to condemn the practices of plowing the prairie and even of settling the plains at all. These criticisms reinforced the belief in the stability of the climax community and in the implicit political mandate to preserve it from devastating human forces.

Even before the dust storms, however, Henry Gleason had challenged the idea that vegetation formed "communities" at all, especially the concept that they were fundamental units of nature. He argued that "communities" were just coincidental associations of plants, resulting from two processes—migration, through dispersal of seeds, and environmental selection, based on competition for resources.[21] Large associations of similar vegetation, like

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[21] Henry Gleason, "The Structure and Development of the Plant Association," *Bulletin of the Torrey Botanical Club* 44 (1917): 463–81; Henry Gleason, "The Individualistic Concept of the Plant Association," *Bulletin of the Torrey Botanical Club* 53 (1926): 1–20.

Clements's prairies, were not higher-level organisms; they merely expressed the consistency of the forces of migration and environmental selection. Studying associations over long distances showed vegetation to be a gradually changing continuum rather than a fixed community.

Dismissed initially, Gleason's "individualistic concept of the plant association" was eventually accepted as the more accurate explanation of succession. Nevertheless, some of Clements's most important ideas were transferred to the ecosystem model, developed by Eugene Odum. Ecosystems are fundamentally different from Clements's and Gleason's population-community models, in that they construct nature in terms of nutrient cycling and energy flow instead of the observable phenomena of species distribution. The ecosystem concept inherited Clements's idea of succession as a progressive sequence, which culminates in a stable "ecosystem."[22] Once again these ideas were to be disproved.

Following Gleason, William H. Drury and Ian C. T. Nisbet in 1973 argued that succession is explained by initial seed distribution and differences in the growth rates and life spans of plant species.[23] The first few generations of plants seed in at the same time after disturbance, but fast-growing plants quickly dominate and suppress the growth of the others rather than preparing the way for them. Only when the faster-growing plants die do the slower-growing, longer-lived ones achieve dominance.

With the early processes of succession adequately explained, emphasis has shifted to the ways that plants die—that is, to disturbances. F. Herbert Boorman and Gene E. Likens characterize forests on the basis of their disturbance regimes.[24] Disturbances such as fire, windstorms, clear-cutting, and even the death of individual trees occur with identifiable frequencies and magnitudes in different forests. On average, over a given period of time, the entire forest will be disturbed. With this information, ecologists can predict the development of the forest's biomass, a measure of all of its living and dead organic matter. At any given time, a forest consists of a mosaic of differently aged "patches," some gaining biomass and some losing biomass, depending on the history of disturbance. In some forests a "steady state" occurs, where the biomass is relatively constant. Boorman and Likens call this a "shifting-mosaic steady state." The mosaic of patches shifts as they grow and are disturbed, but the overall condition of the forest is a steady state. Significantly, in Boorman and Liken's model, human activities like clear-cutting and fire suppression are not seen as inherently wrong or unnatural. Clear-cutting may increase the disturbance regime and prevent a forest from achieving a steady state, whereas fire suppression may have the opposite effect. Both activities are seen and evaluated for their effect on the disturbance regime.

An important aspect of Boorman and Liken's approach is that it is specific to a particular forest in a given time period; that is, it links time and space in a given forest. R. V.

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[22] Donald Worster, "The Ecology of Order and Chaos," in *The Wealth of Nature: Environmental History and the Ecological Imagination* (New York: Oxford University Press, 1993).

[23] William H. Drury and Ian C. T. Nisbet, "Succession," *Journal of the Arnold Arboretum* 54 (1973): 331–68.

[24] F. Herbert Boorman and Gene E. Likens, "Catastrophic Disturbance and the Steady State in Northern Hardwood Forests," *American Scientist* 67 (1979): 660–69.

O'Neill, D. L. DeAngeles, J. B. Waide, and T. F. H. Allen further this notion. No ecological explanation, they argue, works at all scales of space and time.[25] A forest may appear stable at one scale and utterly dynamic at another. Even the definition of an ecosystem changes in time and space.

> Depending on the spatio-temporal scale or window through which one is viewing the world, a forest stand may appear (1) as a dynamic entity in its own right, (2) as a constant, (i.e. non-dynamic) background within which an organism operates, or (3) as inconsequential noise in major geomorphological processes. Thus, it becomes impossible to designate *the* components of *the* ecosystem. The designations will change as the spatio-temporal scale changes.[26]

One of the most important tasks of a scientist (or an artist or landscape architect) is to define the scale at which to observe and act in the environment. Interesting ecological questions at the scale of populations and communities or at the time scale of succession do not dictate the correct scale for generalizing ecological theory. Concepts such as progression and stability, which can be found at one scale, cannot be generalized to fit all situations.

This brief history of succession theory helps interpret the Five Ponds forest and *Host Analog.* One of the striking aspects of the Five Ponds forest is its intactness. The kinds of non-native species that often invade American forests are entirely absent; even native, shade intolerant species (aspens, paper birch, pin cherries) are rare. This is a mature, resilient forest, which has not been subject to much outside disturbance.[27] In the wake of the storm, it is likely to regenerate from the many surviving seedlings, since there were few shade intolerant species and the trees that fell only killed the seedlings on which they landed. Significantly, red spruce seedlings, the most sought after tree when the Adirondack forests were logged, abound. The vast number of big spruces distinguishes the old-growth forest from the second-growth forest. So this windstorm, by increasing the quantity of red spruce, will return the second-growth forest to a community more like that of the unlogged forest.

The Five Ponds forest is similar to the New Hampshire forest from which Boorman and Likens derived their model of the "shifting-mosaic steady state." It is moist and resistant to fire, and mountains shelter it from most windstorms. Storms of this caliber are rare. The old-growth forest is probably in a steady state, and the second-growth should reach one in the future if the disturbance regime remains the same.

Host Analog is a different forest, defined and acted upon in a different scale of space and time. Though Simpson envisions his artwork occupying a time frame of hundreds of years,

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[25] R. V. O'Neill et al., *A Hierarchical Concept of Ecosystems* (Princeton, N.J.: Princeton University Press, 1986).

[26] O'Neill et al., *Hierarchical Concept of Ecosystems,* 83.

[27] Jerry Jenkins, "Notes on the Adirondack Blowdown of July 15th, 1995: Scientific Background, Observations and Policy Issues," Wildlife Conservation Society, N.Y., 1995.

he is working at a tiny scale, in the present, with no assurances that the artwork will even last for a decade, let alone a hundred years. At this scale his individual actions are important to a degree that they would not be in the Five Ponds Wilderness Area. He has significantly influenced the initial composition of the site by introducing the conifer seedlings and other forest plants. These are plants that would not have been able to migrate to this site. He has also created an environment that is supportive of many species. It is moist, but not too wet, and can be very sunny and hot until early afternoon. His decisions to leave or cut out vegetation will help shape the disturbance regime of this site. In shaping a disturbance regime, Simpson is shaping a forest. As the faster-growing trees shade the conifers, they will suppress the smaller trees' growth. But they will also create a shady understory and more spatial differentiation. Currently, the only real spatial differences occur between and behind the log segments, where it is shady and cool and where mosses and ferns grow. At the spatial and temporal scale of the Five Ponds forest, these differences are inconsequential, but at the scale of *Host Analog,* they matter.

Simpson seemed to believe that leaving the artwork alone would allow "nature to take its course." Belief that nature *has* a course is a legacy of Clements's theory of succession. The tenacity of Clements's ideas most likely reflects the appeal of ideas like "harmony" and "balance," as well as the persistence in the American imagination of the frontier opposition of nature and civilization. But they also endure because landscapes like the Five Ponds Wilderness Area seem as stable as Clements's unplowed prairies, even if ecological evidence does not universally support that reading.

The environmental historian Donald Worster sees the shift from Clements's ecology of balance and order to one of disturbance, competition, and chance as evidence that the political will to protect nature is gone.[28] He suspects that ecologists trained with computer models, rather than in the field, have less empathy for the natural world. I think the shift in ecological theory merely recognizes that scientific evidence does not support Clements's and Odum's ideas. The evidence suggests that ecological ideas are not universal but instead situated in place and time. Concepts such as climax communities and stable ecosystems are human constructs. That they can be found in the Five Ponds forest at a particular scale of time and place is important. Equally important is the recognition that they are "found" by people—individuals studying and acting upon the landscape with a particular purpose. The human endeavor is an important part of the ecological construction of the forest. Simpson is inescapably present in the ecology of *Host Analog,* as are the politicians who amended the New York State Constitution and created the New York State Forest Preserve.

The Experience of Nature

When I spoke with Buster Simpson he had not seen *Host Analog* since the surrounding vegetation had overgrown it. The vegetation is messy, and I suspect when he does see it, he will think the work has lost its "graphic" quality, his term for the sculptural presence of the artwork. Describing it as messy is, of course, a value judgment, but it is not an uncommon one. Cathedral Pines, for example, was described by the first selectman of Cornwall as "a terrible mess";[29] Michael Pollan described *Time Landscape*™ in 1991 as "an impenetrable tangle";[30] and even Charlie Canham, a prominent forest ecologist leading a tour of the Five Ponds blowdown, warned visitors to suspend their aesthetic sensibilities because the blowdown was so ugly.

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[28] Worster, "Ecology of Order and Chaos," 165–66.

Comments such as these about the "mess" of nature are often dismissed as being irrelevant and uninformed. Such sentiments with regard to Cathedral Pines were considered "shortsighted, unscientific, and worst of all, anthropocentric."[31] The work of the environmental psychologists Rachel and Stephen Kaplan, however, suggests otherwise.[32] They theorize that such aesthetic judgments reflect important psychological relationships with nature. They have studied people's reactions to ordinary landscapes, like the streets and neighborhood parks that make up much of the landscape of a city or the farm-and-field urban fringe, and have found an overlooked nature. It is defined in part by the context in which it is experienced and is important in maintaining psychological well-being. Significantly, it is a reaction that helps explain the perceived messiness in these forest landscapes and, in particular, distinguishes differences within *Time Landscape*™.

Time Landscape™ is intended to tell a succession story—the early successional cedars and birches of the southern end giving way to the beeches, oaks, and elms of the northern end. Whether or not the story is understood, it affects the appearance of the forest. The southern end is an irregular mass of vegetation, with foliage conforming to the shapes of the individual trees and extending almost to the ground. It is messy and confusing. But in the northern part, the foliage becomes a convincing canopy, supported by numerous trunks up to twelve inches in diameter. Light is filtered into the space below. Here, it feels like a forest.

The Kaplans would describe these differences between the southern and northern halves as differences in "content" and "spatial organization."[33] Content is the "stuff" of nature—typically vegetation, water, landforms, and so forth. Though these categories are hardly surprising, the subtle distinctions are revealing. Highly maintained vegetation—mowed lawns, tall, open-branched trees, shrubs in landscaped beds—is still identified as nature. Though it may be "less natural" than wilder vegetation, it is still natural. Similarly, unpaved roads and paths are also seen as being part of nature, despite their obvious human origins. Weedy and scrubby fields, like the southern end of *Time Landscape*™, emerge as a distinct content area—one that is specifically disliked.

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[29] Quotation by selection, cited in Pollan, "Idea of a Garden," 210.

[30] Michael Pollan, "Weeds Are Us," *Second Nature,* 133.

[31] Pollan, "Idea of a Garden," 210.

[32] Rachel Kaplan and Stephen Kaplan, *The Experience of Nature: A Psychological Perspective* (New York: Cambridge University Press, 1989).

[33] Ibid., chap. 1.

Time Landscape™, *summer 1997*

These differences in content may be related to differences in spatial organization. Spatial configuration influences our ability to make sense of the environment and to be stimulated or involved in it.[34] In particular, an environment's spatial definition and degree of openness are important. Spatial definition is the division and articulation of space, rather than its mere enclosure. Being able to see through layers of spaces into others and beyond is a characteristic of good spatial definition. Clarity of the ground plane is also important, as it affects the ability to read one's way through the landscape. Openness affects comprehension of the landscape and the ability to project oneself into it. Landscapes that are too open offer little visual stimulation, and those that are too closed block one's view and cut off the possibility of more information.

The content and particular spatial configuration of the southern part of *Time Landscape*™ help explain its perceived messiness. The density of the vegetation blocks most views; there is little spatial layering and consequently little visual involvement. The northern half, by contrast, with its clear ground plane and neatly articulated space, is much more comprehensible. Visitors can easily project into and through the spaces. The lack of a developed understory makes it perhaps too open; it is easy to see all there is to see in one glance. As a whole, however, the differences between the northern and southern halves and between the sunny, leafy western side and the shady, high canopied eastern side make for a spatially rich forest, surprising for such a small site.

[34] Ibid., chap. 2.

The Kaplans' real interest is in the restorative value of experiencing nature.[35] Content and spatial organization are just part of nature's ability to draw one's attention and give a bit of cognitive rest. Many tasks that we humans undertake demand considerable brain power to remain focused. This demands directed or voluntary attention, which has a limited reserve. Using too much directed attention results in mental fatigue, exhibiting symptoms similar to stress—irritability, inability to concentrate, forgetfulness, among others. Our brains literally get tired and need rest. Nature exerts a persistent but subtle attraction that draws upon involuntary attention, which is apparently effortless. It enables directed attention to rest. The result is a restoration of inner peacefulness and calm and an ability to think more clearly about matters of importance.

That a place as small as *Time Landscape*™ can draw visitors into it and offer a bit of rest is consistent with the Kaplans' notion of "nearby nature."[36] A forest needn't be vast and distant to be natural. Indeed, the small size of *Time Landscape*™ is offset by its location in the heart of Manhattan and the ease of experiencing it. Merely walking home from work can be a nature experience. Detouring around the back of the forest to walk under the shade of the canopy, feeding peanuts to the squirrels, or eating lunch on the nearby concrete steps while peering into the relative "depths" of the forest are all important experiences of nature in this very urban setting. The same experiences would not be as natural or as restorative in a larger, more remote forest, but that is precisely the point. Nearby nature is "more natural" than its surroundings and thus is defined relative to its context. Such simple activities as eating lunch under a tree or feeding birds in your own backyard are often overlooked as nature activities, in the same way that small places like *Time Landscape*™ are overlooked as pieces of nature. Of course, longer experiences in larger, "more natural" landscapes offer a greater psychological benefit, as does more intimate involvement such as gardening. The importance of nearby nature, then, is that it is all around us on different scales and in different contexts, and that it is experienced through some very simple and ordinary activities.

Most nature experiences are part of a continuum that ranges from the view of a favorite tree outside one's window to an extensive wilderness backpacking trip. *Time Landscape*™ is unusual in that it differs so markedly from its nearby context. It brings a more remote-seeming nature into a dense urban environment. That is the central gesture of Sonfist's artistic invention. In some ways, it is not unlike the relationship of Cathedral Pines to the town of Cornwall. Cathedral Pines was part of a compressed nature continuum, giving the forest a special relationship to the residents of Cornwall.

The center of Cornwall is a T intersection at the head of which sits the town's impressive library building. Walking east from there, along Pine Street, one passes a few old, clapboard-sided houses and barns and a row of beautiful, old sugar maples, survivors of the storm. It is a picture-perfect New England town. Another T intersection at the edge of town overlooks a meadow, traced by a small stream in a gently curving valley. Turning left the road eventually reaches the base of the hill where Cathedral Pines once stood. The road soon forks; the left fork used to enter the Pines here and ascend a hill. The exceptionally tall trunks right next to the narrow roadbed were an impressive sight.

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[35] Ibid., chap. 6.

[36] Ibid., chap. 5.

This short progression from village to field to forest is indicative of the integration of Cathedral Pines into the landscape of Cornwall. The many trees in town, the view across the valley to the surrounding hills, and the forest itself were all part of the natural environment of Cornwall. Cathedral Pines was not the only loss for the residents of Cornwall; the tornado wiped out almost all of the trees in the village. People were disoriented and wept upon seeing the damage.

Recognizing the village trees as part of nature, known with the intimacy of one's own home, helps explain the townspeople's loss. But it also helps explain the particular relationship that many of the villagers had with Cathedral Pines. The forest was known with the kind of taken-for-granted intimacy that comes through regular encounters, and yet it offered the kind of nature experience that others would travel much longer distances to find. Such a relationship was unique to those who lived nearby.

Certainly the significance of Cathedral Pines cannot be reduced to mere proximity and psychological benefit. But neither can the Kaplans' work. Its significance is that it reveals aspects of nature that are often overlooked by "nature professionals"—ecologists, foresters, landscape architects, and others. It shows that nature is known in a given context and is experienced in very ordinary, yet important ways. Their work helps identify relationships with nature as simple as gardening or feeding squirrels—relationships that are akin to those suggested by the community metaphor. From this perspective, one can rarely say "This is nature, and that is not" with any real certainty. More likely, one could say "This is more (or less) natural than that" or "This is natural to these people in this way."

Constructing the American Presettlement Forest

The appeal to Buster Simpson of leaving *Host Analog* alone is that the artwork is "asking to go someplace more interesting." In other words, what his landscape is about may become more interesting than what he had intended. Each of these four landscapes is about many things, but all of them speak to the importance of the presettlement forest in the American imagination. It would be easy to claim that the Five Ponds forest and (the pre-blowdown) Cathedral Pines embody the presettlement forest, whereas *Time Landscape*™ and *Host Analog* are just symbols of it, but none of these forests actually *is* the forest that existed before European settlement. Nor could they be. Forests change; trees grow and die and are replaced by others. But just as important, they change in the imagination, too. The "presettlement forest" did not exist before European settlement: it is an imagined forest that only came into being after the early colonists cleared the forests, so that they were no longer a threat. It owes its existence to the workings of culture—literature, art, and history—including the design and management of landscapes. These four forests do not merely represent the presettlement forest but actively construct it in the American imagination and in the American landscape.

Simon Schama wrote an important chapter in the construction of the presettlement forest.[37] He recounts the discovery of the Calaveras and Mariposa groves of giant sequoias in California and their transformation from a "botanical freak show" to "America's own natural temple." Visitors from the East, "pilgrims," came to venerate the ancient trees, swept up in the fact that they dated back to the time of Christ. The trees legitimated American civilization, grounding it in a time earlier than the great monuments of Europe: "What was the Colosseum beside the immense and pre-historic Grizzly Giant, a nobler ruin than the Parthenon: the epitome of heroic endurance over millennia: scarred, burned, ravaged by time and decapitated by lightning. And unlike those heaps of stone, the Giant was yet alive with the vigorous shoots of a new age."[38]

The links to Christianity were especially strong. Sydney Andrews, a correspondent of the *Boston Daily Advertiser,* "linked the nativity of the trees to the birth of the Savior: 'What lengths of days are here! His years are the years of the Christian era; perhaps in the hour when the angels saw the Star of Bethlehem standing in the East, this germ broke through the tender sod and came out into the air of the Upper World.'"[39] The image of the trees as both an ancient and a spiritual symbol, "a botanical pantheon," was strengthened with architectural metaphors: "It was precisely because the red columns of this sublimely American temple had not been constructed by the hand of man that they seemed providentially sited, growing inexorably ever more awesome until God's new Chosen People could discover them in the heart of the Promised West."[40]

Cathedral Pines is heir to these imaginings of the forest, evident even in its name. "The Cathedral Pines were so called for their enormous height and majesty, suggesting comparison with the impression created by a great cathedral," wrote Cornwall's local historian, Michael Gannett, answering a letter from two Connecticut women.[41] This inquiry, however, is the only known reference to the naming of the Pines, suggesting that the metaphor of the forest as a cathedral is so natural as to not invite speculation. Such acceptance is surprising given the fascination with the origin of the Pines itself. Scarcely a naturalist's report fails to admit that the Pines was "not part of the primeval forest that had covered the region before its settlement by the Colonists,"[42] and yet in the same breath, each tells of the uncertainty of the forest's origin. Enough mystery shrouds its origin to preserve its mythic stature, presiding over the birth of Cornwall.

In 1980 a storm blew several of the pines down. They were cored and found to be mostly 200 years old—less than Cornwall's 240 years. But a few were 300 years old, an anomaly in a seemingly even-aged pine stand. This unaccountable difference in age left the door open to speculation. "Had these older trees been part of an extensive white-pine stand most of whose members were lost to some naturally occurring disaster?" queried one writer

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[37] Simon Schama, *Landscape and Memory* (New York: Alfred A. Knopf, 1995).

[38] Ibid., 195.

[39] Sydney Andrews, *Boston Daily Advertiser,* 3 November 1869, quoted in ibid., 190.

[40] Schama, *Landscape and Memory,* 191.

[41] Michael Gannett to Mrs. Eastwick, Torrington, Conn., Cornwall Historical Society Archives.

[42] Gannett to Mrs. Eastwick.

Cathedral Pines, December 1987 (photo: George Bellerose)

of a Nature Conservancy guidebook.[43] One can detect the longing for an ancient heritage.

Other writing, less scientifically based, is unabashed in linking Cathedral Pines to the origins of Connecticut and to the spirituality of a cathedral. In her 1932 verse, "Cathedral Pines, Cornwall Connecticut," Grace Miner Lippincott, a resident of a town more than seventy miles away, wrote:

> I dream of a time so long ago, when tiny buds unfurled,
> And grew upon this giant rock, as breezes round them whirled.
> The roots reached down to kindly earth, when pioneers first came,
> And kept watch at the village birth, before it had a name.
> . . . .
> As the top of the noble pine trees, reach up with roots in sod.
> To catch the beaming sunshine, just so; we'll find our God.[44]

At the celebration of the 250th anniversary of the founding of Cornwall, just one year after the demise of Cathedral Pines, Oliver Eldridge eulogized the stand in his poem "Cathedral Pines, 1989."

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[43] Susan D. Cooley, *Country Walks in Connecticut: A Guide to Nature Conservancy Preserves* (Boston: The Appalachian Mountain Club and The Nature Conservancy, 1982), 14.

[44] Grace Miner Lippincott, "Cathedral Pines, Cornwall Connecticut" (1932), Cornwall Historical Society Archives.

Sacred this hillside was. Hemlock and pine
Dimmed the day's glare as in a holy room.
A place of heaven-on-earth, it seemed, these woods
Two hundred fifty years—since settlement—
They were preserved. No rasping drone of saw,
Belittled the magnificence of these.
Before majestic Presence one in awe
Stood in this temple. Columns beyond count
Soared skyward. Needled architraves of boughs
Filtered the sun to the dun duff below.
There roots invaded crevices in ledge
And cracks in granite, questing after damp.
With such firm bases and such pedestals
These pillars seemed forever in their strength—
A thousand seasons proving: they endure.[45]

The irony in preserving a mythic grove such as Cathedral Pines is that, while the Nature Conservancy could protect it from sacrilegious human acts, it could not protect the grove from a storm. Such is the problem of making myths out of forests. They change. This paradox is exemplified in another construction of the presettlement forest, Barbara McMartin's *The Great Forest of the Adirondacks.* McMartin, one of the most respected scholars of Adirondack forests, tells of her "aesthetic" search for the mythic "Great Forest":

> What was the Great Forest really like? How much of it still exists? Do any of the forest tracts I wander through resemble the Great Forest? I have long suspected that they do, for some patches of forest inspire awe with their quiet magnificence. Like John Muir, I would choose to worship in nature's cathedrals, and although those in the eastern United States are less grand than their western counterparts, they are nevertheless wonderful structures of tall pillars with leafy canopies providing a fenestration that filters light and subdues worldly penetration.[46]

McMartin mapped the history of forest cutting in the Adirondacks and sought out the gaps in the map—places that had been bypassed by logging, clearing, and other practices. She looked for evidence of old-growth status, most notably large spruces, the most sought after tree in the early years of logging.

> Imagine my pleasure when I discovered on my first such foray that not only was I walking in great forest, I was finding spruce approaching 30 inches in diameter. . . . The spruce were intermingled with huge yellow birch; one giant old birch measuring 52 inches in diameter. I realized I was standing in the archetype of a spruce/yellow birch forest.[47]

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[45] Oliver Eldridge, "Cathedral Pines, 1989," Cornwall Historical Society Archives.

[46] Barbara McMartin, *The Great Forest of the Adirondacks* (Utica, N.Y.: North Country Books, 1994).

[47] Ibid., 183.

She easily identified 200,000 acres of unlogged forest and 300,000 lightly logged acres that had been protected long enough to meet old-growth criteria, having among other things "as many fallen giants littering the forest floor as there are giants standing."[48] Despite referring to the largest trees as "giants," McMartin knows that not all old-growth forests are impressive in stature and that the trees of Adirondack forests in particular do not grow to majestic dimensions. The groves she sought out and romantically described are sites that are particularly well suited to growing forests. They have good soil, and their geography has sheltered them from storms and human activities.

A paradox emerges between her historical and scientific depiction of a dynamic forest and the romantic scenic with which she describes the Great Forest. Rather than just depicting a continuous majestic forest, she seems to be constructing a forest that is symbolized in certain mythic groves—ones that meet the criteria of old growth "both technically and emotionally."[49]

Probably the most visible and majestic trees in the Five Ponds Wilderness Area were the white pines towering over the Oswegatchie River from its sandy bluffs. These "spectacularly vulnerable" stands were almost entirely flattened by the storm.[50] The pines may regenerate on these same sites, but it will probably be close to two hundred years before they regain their former stature. Other stands, however, were sheltered from the storm by their topography and received little damage. In forty or fifty years, when the surrounding forest has recovered from this storm, these surviving groves will stand out as the mythic groves that McMartin describes. The "forever wild" clause of the New York State Constitution and the "Unit Management Plan" for the wilderness area ensure that this will happen. In this way they, too, construct a version of the presettlement forest.

A designated wilderness area does not so much "freeze" the forest in time, but situate it. The Five Ponds Wilderness Area is not the forest that existed before trappers and loggers encountered it. It is the "presettlement forest" as it is imagined and "preserved" in the late twentieth century. It is physically constructed by individuals, who design and manage the landscape, and as the metaphors of wilderness and community point out, it is freighted with the cultural baggage of our time.

Conclusion

These forests are not the same; that is obvious. What is less obvious is that each is not natural in the same way. They illustrate the somewhat perplexing notion that nature is culturally constructed. Instead of a universal "other," they show nature to be situated in place and time, relative to the people who experience it, imagine it, and construct it. That situation is important: it combats the troubling feeling that nature can be anything at all. Instead, it

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[48] I bid., 182.

[49] Ibid., 186.

[50] Jenkins, "Notes on the Adirondack Blowdown," 29–31.

Host Analog*, summer 1997*

places nature in a historical context and grounds it in a particular physical landscape. Just as nature in England could not be understood by A. G. Tansley as pristine and free of human influence, neither can it be seen in the United States as a stable "anthropogenic climax"—at least not yet.

As the controversies in the aftermath of the two storms illustrate, the Five Ponds Wilderness Area and Cathedral Pines were natural in more ways than they were thought to be. In each case the management decisions privileged certain perspectives of nature at the expense of others, hence the controversy. Perhaps controversy is unavoidable when conceptions of nature contradict one another, but it is far from clear that "wilderness nature" should be so consistently privileged in environmental decision making.

Time Landscape™ and *Host Analog* are conspicuously invented forests. Little ecological or cultural precedent existed for either of them. As Simpson has discovered, they force decisions about how far to "garden" the forest. Such decisions obviously reflect the constructions of nature in a particular place and time, but they also reveal the extent to which individuals, as bearers of culture, affect those constructions.

Buster Simpson's dilemma is indeed at the crux of environmental decisions, but it is not just a question of which vegetation to leave or prune. The question is how is his artwork to be natural? How will it construct nature? His dilemma centers on his role as an "author" of nature, an authorship denied and condemned by belief in the wilderness metaphor with its preservationist mandate.

Preservation is a legitimate environmental strategy, to be sure. But it is neither politically neutral nor more natural than others. It reflects a particular conception of nature, which itself only reflects a narrow range of the richness of meaning found in other constructions of nature. By constructing nature in alternative ways to the wilderness metaphor, particularly in ways that are appropriate to landscape architecture, I hope to recognize and encourage other environmental strategies that reflect the richness and diversity of relationships with nature in America today.

The Post–Earth Day Conundrum: Translating Environmental Values into Landscape Design

Elizabeth K. Meyer

Over the last quarter century, environmentalism has shifted from a fringe issue to a central theme in American cultural consciousness and political discourse.[1] Environmentalism's evolution from a special interest to a broad-based concern among the general population paralleled a re-centering in the practice of landscape architecture. Motivated by environmental values, landscape architects became increasingly knowledgeable about ecological principles and systems. The associated types of design practices were not monolithic, representing a single school of thought, but diverse, ranging from "scientific" restoration ecology to site-specific "artistic" interventions, from projects that simulated nature to those that revealed the act of human creativity and construction. The practices of several landscape architects bridged the "great divide" between ecology and design and between science and art that characterized the profession in the 1970s. In constructing this bridge, a body of work has emerged that not only applies ecological environmental values to a design language,[2] but also suggests a strategy for breaking out of the restrictive tenets of modern art that so marginalized the landscape as a medium and subject.

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[1] Andreas Huyssen, "Mapping the Postmodern," in *After the Great Divide: Modernism, Mass Culture, Postmodernism* (Bloomington: Indiana University Press, 1986), 220. See Andreas Huyssen and Marshall Berman, *All That Is Solid Melts into Air: The Experience of Modernity* (New York: Penguin Books, 1982), for their insightful analyses of how nature's cultural position evolved dramatically from the time of modernism to postmodernism. In the early twentieth century, nature was viewed as a resource to be conserved and then consumed for modernization's progress. By the late twentieth century, the postmodern culture recovered nature from its role as "other" to one that was incorporated into culture and progress. Furthermore, environmentalism and especially ecology shed their roles as single-issue critiques of progress and transformed into broad-based social values.

[2] By the 1960s, environmentalism was no longer focused solely on "conservation [preservation] and measures against pollution." Rather, a new constituency politicized by books, such as *Silent Spring,* and such events as the reclassification of the reports on nuclear bombing and fallout, construed its relationship with nature as ecologically environmental, not simply environmental. Raymond Williams, *Keywords: A Vocabulary of Culture and Society* (New York: Oxford University Press, 1983), 110–11; Derek Wall, ed., *Green History: A Reader in Environmental Literature, Philosophy and Politics* (London: Routledge Press, 1994), 8–9. Wall's introduction includes a chart and passage from Jonathan Porritt's *Seeing Green* (Oxford: Blackwell, 1984), in which the author correlates environmentalism with "the politics of industrialization," suggesting that a modernized society cares about the conservation of nature only as a means to ensure the availability of natural resources for industrial production. To clarify my distinctions of ecology, I embrace the concept of ecological environmentalism that matches what Max Oelschlaeger calls "preservationism," a worldview in which the natural world is construed as dynamic, interrelated ecosystems that include humans, who have the ability to alter those systems. See Max Oelschlaeger, *The Idea of Wilderness* (New Haven: Yale University Press, 1991),

One thread in the tapestry of the postmodern, postenvironmental movement landscape involves the search for significant forms and spaces that might embody, reveal, and express ecological principles while embodying and inculcating environmental values.[3] The focus here is directed toward those works of landscape architecture that represent a new type of practice, one that makes the natural world—its ecological and geological processes, its rapid phenomena, and its invisible substructure—more evident, visibly legible, and meaningful to those who live, work, and play in the landscape. One of the trajectories that connects the disparate work of the last two decades in landscape architecture is the desire to make palpable, physical, and aesthetic the intimate interconnections between humans and the natural world, thus constructing experience and engendering a sense of affiliation between humans and nature. This desire has inserted ecological environmentalism into the design process in many places—in programming, site analysis and interpretation, form grammars, and construction techniques. This impulse has also challenged the tenet of modern form as an isolated, bounded form or space experienced by a detached, contemplative observer by focusing on the construction of aesthetic experiences bound to, and enmeshed in, their specific cultural and ecological context.[4] The projects infused by these desires and impulses are environmental experiences, not bounded landscape objects, and they constitute what the cultural critic Andreas Huyssen regards as a critical postmodern reconsideration of modern art and culture as filtered through a new lens—in this case, the lens of ecological environmentalism.[5]

The merit of exploring this genre of work lies in its contribution as a mediating practice between two disparate discourses, each with its own language and principles—the

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289. In the context of ideas assembled in this anthology, Oelschlaeger's concept of preservationism corresponds to Hastings and Nadenicek's description of "integrative anthropocentric environmentalism."

[3] Other threads of the postmodern environmental landscape tapestry include urban works that expand the role of landscape from amenity to essential infrastructure, as documented in the writing of Anne Whiston Spirn, Michael Hough, Robert Thayer, and Elissa Rosenberg; brownfield and toxic site reclamation; and landscape ecological theory and practice influenced by Richard Forman and Joan Nassauer. Louise Mozingo summarizes another strand in her recent article "The Aesthetics of Ecological Design: Seeing Science as Culture," *Landscape Journal* 16, no. 1 (spring 1997): 46–59. Mozingo's thesis, while different from mine, is complementary, in that she chastises ecological designers for ignoring aesthetics and thus ignoring the perception and rituals of visitors to their projects—the very perceptions and rituals that might build a new audience and advocacy group for environmental issues.

[4] Michael Van Valkenburgh introduced me to the concept "constructing experience" during one of our many conversations about design pedagogy and practice over the last ten years. George Hargreaves voiced parallel interests when he described his role as "trying to be a participant" rather than a controller of all a site's forms and spaces (interview by author, October 1998).

[5] Huyssen, "Mapping the Postmodern," 195–221, defines postmodernity as a cultural condition that is a critical extension of modernity. This critical capacity seeks out those issues excluded from modernity, such as environmentalism, and repositions them as the field upon which culture operates. This notion of postmodernity has much more resonance for landscape architecture than the limited sense of the postmodern as a return to historical styles and types.

dialectic between science and art and between ecological environmentalism and landscape architectural design.[6] For a designer, one conundrum presented by the environmental movement was the disconnection between site analysis and design expression or, in other words, between environmental values and form generation. After identifying the most ecologically valuable or fragile places, designating them "no build" zones, and ascertaining the most ecologically fit location to site a building or construct a designed landscape, how was one to shape the forms and spaces of that landscape? Was it possible to create places with forms significantly different from those of earlier designers who were not as ecologically literate? Could one make the ecological planning process visible to those who came to the site? Would they be able to decode it? Was it necessary to create places that were recognizably different from existing landscapes for a contemporary public that was considerably more environmentally aware? Once having decided that the design vocabulary, syntax, and content should inflect the changing values of both designers and design patrons, the landscape architect encountered a second problem in the 1980s. How could one give form to dynamic processes and fluctuating systems but not resort to the modern design codes that privileged static, bounded, ideal objects in art and architecture and often relegated landscape to visual scenery, a stripped-down version of the pastoral?

These were among the questions that confronted designers during the quarter century after the first Earth Day, which occurred in April 1970. When landscape architects such as Susan Child, George Hargreaves, Catherine Howett, Anne Whiston Spirn, and Michael Van Valkenburgh began their academic and design practices, two strong models existed. The first, environmental or ecological design, had emerged out of the writings and teachings of educators such as Ian McHarg. Its primary contribution to the design process was to structure the preconceptual design phase according to a more defensible, scientific method.[7] The second model, landscape architecture as art, had emerged from the teachings and practice of educators such as Peter Walker who were concerned that the design process had become so beholden to analyses—ecological, social, and behavioral—that the art of making the landscape visible, beautiful, and memorable had been made subservient to the landscape's function.[8] This model's primary contribution was its application, in the conceptual and design development phase, of the vocabulary and tactics of contemporary art to the making of landscapes. These two models existed in isolated opposition from one another, cognizant of the other but operating in separate worlds, based on separate value systems and vocabularies.

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[6] For a fuller explanation of the role of design theory as a mediating practice, see Elizabeth Meyer, "Situating Modern Landscape Architecture: Theory as a Bridging, Mediating, and Reconciling Practice," in *Design + Values: Conference Proceedings, CELA 1992,* IV, ed. Elissa Rosenberg (Washington, D.C.: Landscape Architecture Foundation, 1993), 167–78.

[7] Ian McHarg, *Design with Nature* (Garden City, N.Y.: Natural History Press, 1969). See Spirn's article in this volume for an account of the interdependence of McHarg's academic and private practices. Like those of his antagonist, Peter Walker, McHarg's significant contributions to the discipline resulted from the creative tension between his teaching and practice. Though my article does not cover the intellectual and theoretical critique and extension of McHarg's ideas by Anne W. Spirn, James Corner, and Anu Mathur at the University of Pennsylvania in the 1980s and 1990s, this fascinating and significant story sometimes parallels and overlaps the one I chronicle here.

[8] See Peter Walker, "A Personal Approach to Design," in *Peter Walker: Landscape as Art,* Process Architecture 85 (Tokyo: Process Architecture, 1989); Linda Jewell, ed., *Peter Walker: Experiments in Gesture, Seriality and Flatness* (New York: Rizzoli, 1990); Leah Levy and Peter Walker, *Peter Walker: Minimalist Gardens* (Washington, D.C.: Spacemaker Press, 1997).

This isolation troubled, even confounded, those landscape architects drawn to the discipline in the aftermath of the 1970s environmental movement. The divide between science and art that was integral to late-modern design theory and practice, such as McHarg's and Walker's, was called into question by such postmodern concerns as environmentalism, a strong cultural undercurrent felt by young landscape architects. From the perspective of this postmodern postenvironmental movement, two key issues were identified and then problemmatized in the works of the next generation. First, the lack of formal inquiry or invention in much environmental planning and design ensured landscape architecture's continued invisibility, a legacy of modern urbanism. This invisibility was frequently clothed in the pastoral, a romantic conceit preferred by many modern architects and landscape architects who envisioned their projects surrounded by a background of "natural" scenery. This form of pastoral ecological design, so ably chronicled by the geographer Denis Cosgrove, perpetuated the visual ideology of the modern landscape that reduced the land to pretty scenery devoid of ecological and cultural content.[9] Ecologically planned or not, these landscapes did not look managed or designed to most people. They allowed the public as well as developers and designers to ignore the actual impact of construction and sprawl. Second, while the alternative model was successful in "making the landscape visible" through artistic devices such as gesture, flatness, and objectification and in overcoming the emptiness of much modern urban open space, Walker's vocabulary did not acknowledge the difference between the land's surface and materiality and that of a canvas or gallery floor.[10] As such, Walker's minimalist landscapes perpetuated modern art values and ideals, objecthood and detachment, at the very time such values were being challenged by environmental and conceptual artists.[11]

Landscape designers immersed in the postmodern culture encountered artistic and architectural works and theories that questioned the objecthood of sculpture and buildings. These works explored the site-specific characteristics that conditioned their response, reveled in a "systems aesthetics" that intermingled cultural and natural processes, and valued the regional and the place particular over the universal and ideal. Influenced by such theoretical richness, landscape architects found the venues for exploration between the two models to be rich, varied, and productive. Landscape as a subject, a medium, and an inquiry was no longer marginal, but central to contemporary cultural debates and concerns.[12] What could and did this mean for the discipline whose medium, subject, and canvas was the landscape?

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[9] See Denis Cosgrove, *Social Formation and Symbolic Landscape* (Totowa, N.J.: Barnes and Noble Books, 1984), for an excellent account of the modern landscape's visual, or scenographic, emphasis.

[10] Melanie Simo, "Making the Landscape Visible," in Jewell, *Peter Walker,* 8–13.

[11] See Michael Fried, "Art and Objecthood," *Art Forum* 5, no. 10 (June 1967): 12–23, for a conservative critique of conceptual and performance art; and Jack Burnham, "Systems Esthetics" (1968), reprinted in Richard Kostelanetz, ed., *Esthetics Contemporary,* rev. ed. (New York: Prometheus Books, 1989), 144–53, for a more positive assessment of this work and how it required art critics to change their criteria for evaluation.

The inquiry that followed was not direct and singular, but made by many in meandering and opportunistic forays that sought clues and inspiration from various sources. These included recent works of landscape architecture, such as those by Lawrence Halprin, that represented a first step toward creating a design vocabulary predicated on landforms created by natural processes, such as erosion and deposition due to water and wind; recent works by conceptual artists, such as Hans Haacke and Alan Sonfist, who were probing the boundaries of art objecthood in their process pieces and performances; contemporary environmental and site artists, such as Robert Smithson, Michael Heizer, Mary Miss, and Robert Irwin, who were making site-specific works outside the gallery; and contemporary critics and artists who were translating the ideas of phenomenologists about bodily experience, duration, immersion, and place making into design and art theories.[13]

To some it may seem odd that landscape architects looked toward art and design theory and practice when seeking direction about folding ecological principles and environmental values into their creative processes.[14] But this simultaneous look to art as well as science and to theories of site specificity and phenomenology as well as ecology was critical to the successful integration of environmentalism into landscape architectural design. Post–Earth Day environmentalism was more than a movement to solve individual ecological problems. It was an attempt to change the value systems that had created those problems and then to modify the institutions that acted on those values. As such, it is not surprising that some landscape architects saw environmentalism and ecological concerns as cultural as much as scientific concerns. These designers created designed landscapes that operated as focusing lenses for knowing the natural world, that instigated aesthetic experiences that reduced barriers between humans and the natural world, and that functioned as physical catalysts for changing social rituals affecting the natural world.

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[12] For various accounts of the ways that different disciplines incorporated landscape concerns in the 1970s and 1980s, see John Beardsley, "Earthworks: The Landscape after Modernism," in *Denatured Visions: Landscape and Culture in the Twentieth Century,* ed. Stuart Wrede and William H. Adams (New York: Harry B. Abrams, 1991), 110–17; Rosalind Krauss, "Sculpture in the Expanded Field," in *The Originality of the Avant-Garde and Other Modernist Myths* (Cambridge, Mass.: MIT Press, 1985), 276–90; Colin Rowe and Fred Koetter, *Collage City* (Cambridge, Mass.: MIT Press, 1978).

[13] See Alan Sonfist, ed., *Art in the Land: A Critical Anthology of Environmental Art* (New York: E. P. Dutton, 1983), for brief essays on eighteen artists who were involved in making environmental and site art in the 1960s and 1970s. Phenomenology refers to the philosophical theories and methods that "seek to rise above both idealism and materialism by discovering a philosophical third way, by making intuition the true source of knowledge." *The Oxford English Dictionary* [database online] (Electronic Text Center, University of Virginia Library, Charlottesville, Va.). Designers and artists who employ a phenomenological method frequently speak of a "return to things" that can be known through direct experience and immersion in a place. See Christian Norberg-Schulz, *Genius Loci: Towards a Phenomenology of Architecture* (New York: Rizzoli, 1980), 7.

[14] Steven Krog, "The Language of Modern," *Landscape Architecture* 75, no. 2 (March/April 1985): 56–59, 130. In this article, Krog facetiously refers to Smithson as Saint Robert, acknowledging the reverence young landscape architects have for Smithson's work and writings.

What shape did these practices take? Some sought to emphasize nature's forms, others to make nature's subtle and transitory processes palpable and visible, and still others to reveal a site's entire history of cultural and ecological agents. These varied goals placed the landscape architect in a position of being site perceiver, reader, and interpreter. Straddling the line between conception and reception, controlling and initiating, the landscape architectural design process anticipated the audience's reactions, perceptions, and experiences of place. Therein lay the strength and the potential weakness of this genre of postmodern environmental landscape practice.

Who are these landscape architects, and how do they illuminate the boundaries of this inquiry? Some, like Catherine Howett, Anne Whiston Spirn, and Michael Van Valkenburgh, advocated constructing experiences and implicating natural systems over shaping landscape objects. Such work made the landscape more than visible; it made it tangible and palpable, giving form to an experience that aesthetically engaged humans with their environment. Not content to merely "make the landscape visible,"[15] some, like Susan Child, created works that resurrected the cultural and ecological places that were being leveled and homogenized by contemporary urban development practices. To do so, some designers, like Hargreaves, Van Valkenburgh, and Ken Smith focused on the nonvisual aspects of the landscape that reinforced its placefulness, materiality, tactility, fluctuating systems, character, mood, and phenomena. Some, like Hargreaves and the urban designer William Morrish, looked to the land itself as a generator of form types, enriching an inherited vocabulary of abstract geometry with geomorphological forms and ensembles. Others, like Richard Haag and Laurie Olin, looked for material traces in the land's natural and cultural histories to develop a connection between humans and their constructed places. Their works invited immersion and subjectivity, not detachment and alienation. Landscape architects in this last group found guidance and inspiration in different sources outside the discipline of landscape architecture—in philosophy, art criticism, and cultural geography—that could assist in reenvisioning the relationship between humans and their environment.

Art and Environmental Engagement: Phenomenology and Theories of Experiencing Place

The conflicts and debates within landscape architecture about the interrelationships among ecology, environmentalism, and design did not occur in a cultural vacuum. Events, projects, theories, and issues generated in art, architecture, and philosophy paralleled, overlapped, intersected, and inflected the theory and practice of landscape architecture. *Art and Engagement* (1991), by the art critic Arnold Berleant, provides the most comprehensive account of this infiltration of experiential and environmental works into post-1960s art and design culture. He suggests that this period's art, from "happenings" to landscape architecture, substituted the modern aesthetic criteria of "disinterestedness" for a "continuity of experience" whose goal was empathy.[16] Berleant's "participatory model of aesthetic experience," which draws on the aesthetic theory of the American philosopher John Dewey and the phenomenological writings of the French philosopher Maurice Merleau-Ponty, presents art and design works from the perspective of the perceiver—that is, from the experience of the audience as well as the artist.[17] Berleant's account of late-twentieth-century art and design requires a different conception of space (engaged versus abstract), an altered relationship between subject and object (connected versus detached) and a renewed appreciation for experiencing art over time instead of immediately as a singular event. Because concepts of space, the body, and temporal experience are fundamental to the landscape as a medium and subject, Berleant's critical reappraisal of the last quarter century provides a coherent narrative within which works of landscape architecture can be situated. This is a narrative that assumes that the body and perception are key to environmental awareness and engagement, as evidenced in this passage:

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[15] Simo, "Making the Landscape Visible," 8–13.

[16] Arnold Berleant, *Art and Engagement* (Philadelphia: Temple University Press, 1991), 12, 15.

> Environment, then, is no foreign territory surrounding the self. Understanding environment involves recognizing that human life is lived as an integral part of a physical and cultural medium, under conditions through which people and places join together to achieve shape and identity. Within this environmental medium occur the activating forces of mind, eye, hand, climate, and the other processes of nature, along with the perceptual features and structural conditions that engage these forces and evoke their reactions. To grasp environment, every vestige of dualism must be discarded. There is no inside and outside, human being and external world, even in the final reckoning, no discrete self and separate other.[18]

Berleant's writings provide us with a retrospective understanding of the cultural milieu and the key role aesthetic experience of the environment played in postmodern art and design. Theories related to the making of place and the environmental experience dominated the many articles and books by design critics that were popular in professional offices and in the academy. Writings about contextualism, regionalism, critical regionalism, site, place, and the body permeated design journals in the 1970s and 1980s as the pendulum swung away from the abstract, siteless ideals of modernism toward the site- and locale-specific values of postmodernism.[19] One of the most widely read essays, Kenneth Frampton's "Towards a Critical Regionalism" (1983), alluded to the particular environmental factors that informed design responses—topography, light, climate, and context—emphasizing their tactile and phenomenal influence on the moving, sensing body. This inflection would, in Frampton's view, lead to works that were more place specific, more resistant to globalization, universal solutions, and a "cleared site," or *tabula rasa,* mentality.[20] Not surprisingly, Frampton built his intellectual argument on the works of Paul Ricoeur and Martin Heidegger, both of whom wrote philosophical works on phenomenology.[21]

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[17] Ibid., 61–62, 86–87. See also John Dewey, *Art as Experience* (1934; reprint, New York: Putnam, 1980), 37; Richard Rorty, *Contingency, Irony, and Solidarity* (Cambridge: Cambridge University Press, 1989); idem, *Essays on Heidegger and Others* (Cambridge: Cambridge University Press, 1991). My thanks to James Wescoat for questioning me about Dewey's theories of art as they relate to contemporary theories of phenomenology, as well as the importance of aesthetic experience within art production and reception.

[18] Berleant, *Art and Engagement,* 102.

[19] See, for example, Yi-fu Tuan, *Space and Place: The Perspective of Experience* (Minneapolis: University of Minnesota Press, 1977); Kenneth Frampton, "Towards a Critical Regionalism," in *The Anti-Aesthetic: Essays on Postmodern Culture,* ed. Hal Foster (Seattle, Wash.: Bay Press, 1983), 16–30; Norberg-Schulz, *Genius Loci.*

Other popular design writings included those by Christian Norberg-Schulz, especially his 1982 book *Genius Loci: Towards a Phenomenology of Architecture,* in which he outlined a vocabulary for reading and interpreting a place through the construction of architecture, landscapes, and cities, and the numerous books by Kevin Lynch, particularly *The Image of the City* (1960) and *What Time Is This Place?* (1972).[22] Norberg-Schulz's vocabulary stemmed from everyday things and phenomena that constituted the character and structure of a place that differentiated a place from a space. Lynch's first book was concerned with the way people construct mental maps from their daily engagement with a city's streets, landmarks, and districts—how perception structures conception or legibility. The latter demonstrated how time is embedded in the physical environment and how individual and collective well-being is intertwined with a sense of place in time. Themes of the body, temporal experience, and dwelling in a specific place permeate Lynch's writings, explaining why Norberg-Schulz acknowledged Lynch's ideas in his book on place, *Genius Loci.*[23] These writings are but a small sampling of the design texts on contextualism, place, phenomenology, site, and the environment that informed the theories over the last quarter century.[24]

These theoretical trends found mature landscape architectural expression in Catherine Howett's and Anne Whiston Spirn's writings in the late 1980s. Their operative essays not only observed existing trends, but also speculated about future implications for design practice. Howett's "Systems, Signs, Sensibilities" (1987) provided one of the first comprehensive theoretical strategies for connecting the aesthetic and the ecological.[25] "The domain of aesthetics," wrote Howett,

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[20] Frampton, "Towards a Critical Regionalism," 26. Frampton wrote about Heidegger for a more select audience in the early 1970s. See the editorial in *Oppositions* 4 (October 1974).

[21] See, in particular, Martin Heidegger, "Building Dwelling Thinking," in *Basic Writings: From Being and Time (1927) to The Task of Thinking (1964),* ed. David Krell (San Francisco: Harper and Row, 1977), 320–39.

[22] Kevin Lynch, *Image of the City* (Cambridge, Mass.: MIT Press, 1960); Kevin Lynch, *What Time Is This Place?* (Cambridge, Mass.: MIT Press, 1972). Lynch's influence is especially noteworthy, as Michael Van Valkenburgh worked for him before starting his own practice.

[23] Norberg-Schulz, *Genius Loci,* 12, 19, 20, 201.

[24] The collection of essays in Kate Nesbitt, ed., *Theorizing a New Agenda for Architecture: An Anthology of Architectural Theory, 1965–1995* (New York: Princeton Architectural Press, 1996), demonstrates this point. Four of the fourteen chapters concern issues of landscape, place, phenomenology, site, and the environment. These were not primary issues in the anthologies of treatises and manifestos written by modernists, and their proliferation is yet another indication of how much interest has shifted from idealized types or models toward designs centering on places and the environment.

[25] Catherine Howett, "Systems, Signs, Sensibilities: Sources for a New Landscape Aesthetic," *Landscape Journal* 6, no. 1 (spring 1987): 1–12. Howett mentions that this paper was first presented as a CELA lecture in 1985.

> must come to be seen as coextensive with the ecosphere, rather than narrowed to its traditional applications in art criticism, so that aesthetic values may no longer be isolated from ecological ones. Thus every work of landscape architecture, whatever its scale, ought first of all to be responsive to the whole range of interactive systems—soils and geology, climate and hydrology, vegetation and wildlife, and the human community—that will come into play on a given site and will be affected by its design. In the measure that the forms of the designed landscape artfully express and celebrate that responsiveness, their beauty will be discovered.[26]

Fundamental to Howett's argument was her assertion that ecology should not be applied without mediation and that principles of ecology must be combined with the two other powerful "critical and theoretical currents" already influencing the practice of landscape architecture—semiotics and environmental psychology.[27] The mediating concepts that Howett gleaned from these currents included theories of place making, such as Yi-Fu Tuan's topophilia, "the affective bond between people and place or setting"; Heidegger's theories on building and dwelling, which, she noted, had acquired a cultlike following in schools of architecture and environmental design; and Berleant's "participatory model of aesthetic experience." Each recognized the role experience played in bonding humans to their cultural and ecological environment and acknowledged that those bonds of concern were the prerequisite for transforming feelings into values, then into knowledge, and finally into principles for action. Howett's short essay was of great value in its reflective role of outlining current theoretical dilemmas and suggesting future directions. She intertwined what appeared to be disparate threads and disciplines—environmental art, psychology and philosophy, semiotics and architectural theory—into a narrative that illuminated specific works of landscape art and architecture, such as those by Sonfist, Haag, Halprin, Van Valkenburgh, and Darrell Morrison.

Spirn's "Poetics of City and Nature: Towards a New Aesthetic for Urban Design" (1988) built on her earlier collaborations with McHarg as a student and colleague and on her book *The Granite Garden* (1986). Spirn's style is as compelling as her content, which reads, at times, like a manifesto or a call to action:

> This is an aesthetic that celebrates motion and change, that encompasses dynamic processes, rather than static objects, and that embraces multiple, rather than singular, visions. This is not a timeless aesthetic, but one that recognizes both the flow of passing time and the singularity of the moment in time, that demands both continuity and revolution. This aesthetic engages all the senses, not just sight, but sound, smell, touch and taste, as well. This aesthetic includes both the making of things and places and the sensing, using, and contemplating of them.[28]

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[26] Ibid., 7.

[27] Ibid., 4–5.

[28] Anne Whiston Spirn, "The Poetics of City and Nature: Towards a New Aesthetic for Urban Design," *Landscape Journal* 7, no. 2 (fall 1988): 108. This is another seminal article of the period. Spirn focused on the aesthetic form and experience of landscape architectural design in the city, an argument which she began in *The Granite Garden,* a book that explicitly applied McHarg's vision to the built environment of cities.

Like most manifestos, Spirn's established a genealogy of ideas between her thoughts and the works that preceded her. Like Berleant, she relied on John Dewey's writings and shared his belief in the link between everyday experience and aesthetic experience. Like Howett, she identified currents in contemporary work, such as Halprin's, but she considered work completed to date to be tentative and rudimentary. Her essay was a call to revolutionary action predicated on both a careful study of the processes of everyday life and nature and the thoughtful invention of new forms of drawing, representation, and vocabularies of design. She reminded her readers that invention was mediated through the conventions of one's discipline and that the development of vocabulary and syntax were necessary for the discovery of content and the communication of meaning.

For all the written and verbal debates that characterized the design cultures of the 1970s and 1980s, the most powerful influences on landscape architects attempting to bridge ecological environmentalism and design expression were the artists known as environmental artists, earth artists, or site artists. Obviously, working outdoors with dirt did not pose the same challenges to the internal theories of landscape architecture as it did to the art world of isolated objects, displayed in galleries and traded like commodities in the marketplace. So why did projects like Robert Smithson's *Spiral Jetty, Great Salt Lake* (1970), Michael Heizer's *Double Negative,* Overton, Nevada (1969–70), Walter De Maria's *Lightning Field,* Quemado, New Mexico (1971–77), or Robert Irwin's *Nine Spaces, Nine Trees,* Seattle (1979–83) (Fig. 1) resonate so powerfully with landscape architects?[29] The best of these works were more than significant forms in the landscape. Their creators employed formal presence to focus attention on a place and its particular qualities—its ancient natural histories, its deep time, its recurring natural cycles and processes—that were almost invisible to a culture of distraction and disengagement.[30] This formal presence, then, depended on the experience of a dynamic place by an engaged participant over time. Such emphasis explains why the philosopher Gary Shapiro interpreted Smithson's writings and works through a phenom-

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[29] Landscape architects began to take notice of earth art very early. In October 1969, the year Heizer's *Double Negative* was "unearthed" and a year before the completion of *Spiral Jetty, Landscape Architecture* 60, no. 1, ran an article on "dirt art" and "light art." The theme of *Landscape Architecture* 61, no. 4 (July 1971), was entitled "Landscape Sculpture—the New Leap." Catherine Howett, author of a key article for understanding the influence of ecology, environmental art, environmental psychology, phenomenology, and semiotics on the design of landscapes in the 1980s, recently told me that her master's thesis was on environmental art. George Hargreaves frequently refers to Smithson in his own writing and in interviews. A number of art students who are now landscape architects, like Julie Bargmann, Paula Horrigan, and Mitchell Razor, came to the field through their appreciation for Smithson's unfinished project. Many graduate students of landscape design were introduced to the environmental artists through seminars given by Peter Walker and Melanie Simo. Landscape architecture students at the University of Virginia, for example, learned about environmental art in seminars given by the art historian John Beardsley, author of *Earthworks and Beyond* (New York: Abbeville Press, 1984).

[30] "The more compelling artists today are concerned with 'place' or 'site'—Smith, de Maria, Andre, Heizer, Oppenheim, Huebler—to name a few," said Robert Smithson in "A Sedimentation of the Mind" (1968), reprinted in Nancy Holt, ed., *The Writings of Robert Smithson* (New York: New York University Press, 1979), 85.

1. Corner view of Nine Squares, Nine Trees, *Seattle, Washington, by Robert Irwin, 1979–83. The chain-link walls evoke associations with the building's intention to secure and protect. The light blue plastic coating of the chain-link enclosure and the light pink blossoms of the flowering plum trees within correspond and complement the colors of the metal and masonry veneer of the adjacent building as well as those across the street.*

enological lens and why Robert Irwin predicated his book *Being and Circumstance* (1985) on the philosophical writings of the phenomenologist Merleau-Ponty.[31]

Given the influence that Smithson and Irwin had as artists in the academic and professional studios of landscape architecture, most landscape architects who have heard of phenomenology have probably learned about it through them.[32] What specific lessons have designers gleaned from Smithson and Irwin? In their working method, landscape architects found alternatives to the abstraction of ecological analysis, especially the large-scale mapping of individual ecological systems such as hydrology, soils, and vegetation. Instead of mapping large parcels and attempting to gain a comprehensive conceptual understanding of the whole, artists like Smithson and Irwin concentrated on observing specific phenomena and processes at a particular place. They began with that which was knowable through human experience at the scale of the body. From this standpoint, they sought to reveal, through their interventions, the long-term processes that formed such a place and enabled such an experience.

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[31] Robert Irwin, *Being and Circumstance* (Larkspur Landing, Calif.: Lapis Press, 1985). See Gary Shapiro, *Earthwards: Robert Smithson and Art after Babel* (Berkeley: University of California Press, 1995), for a Heideggerian analysis of Smithson's earthworks.

[32] I taught my first design studio in 1982 at Cornell as a visiting instructor and have taught full time since 1987, first at Harvard and now at Virginia, so this statement is predicated on first-hand accounts and experiences. I was introduced to Smithson's work by one of my graduate students at Cornell, Paula Horrigan, who was an undergraduate art major. Since then every class has included at least one student who entered the field of landscape architecture because they wanted to make earthworks, or site art.

Through his own reflexive practice, Irwin has alternately written and created. *Being and Circumstance* summarizes his theory of site-responsive art, developing categories such as "site-specific" and "site-generated" work, which became entrenched in the vocabulary of landscape architects in the 1980s and 1990s. Irwin's second contribution was his desire to destroy the division between subject and object and between art object and art connoisseur that defined modern art theory and appreciation. To do so, Irwin translated phenomenological theory, especially the ideas of Merleau-Ponty, to art practice, while constructing several projects that have become iconic applications of phenomenology to art and design practice.[33] Hoping to create a conceptual transparency between his creative act and the experience of his works by others, he concentrated on the phenomena of a place that would be experienced to all who visited it: "[W]hat holds true for the artist/perceiver must hold true for the observer/perceiver."[34] This experience would be the subject and content of his work:

> What would an art of the phenomenal or plastic reality be like? Where and how would it exist, and how would we come to know it? . . . [I]n one sense, the phenomenal can be located in the dynamics of change in the world; and in another sense, it can be located in the dynamics of perceiving that world. We can now venture to put these two senses together and say that the phenomenal, as we know it, exists in the dynamics of our perceiving (experiencing) the nature of the world about us and our being in it.[35]

These artistic explorations created new models for landscape architects. More important, they demonstrated that the very criteria by which modern art and architecture had been evaluated—and by which the landscape had been cast out of the family of the fine and applied arts—no longer mattered.[36] The long-standing consensus about what constituted art, an "aesthetics of separation, isolation, contemplation, and distance,"[37] had created philosophical problems for the inclusion of landscape and garden design in modern art.[38] By the 1980s, however, those aspects of landscape that were deemed most problematic for modern art critics—its fieldlike properties, systems aesthetic, ecological flows and fluxes—proved central to postmodern practice in many fields, not only landscape architecture. This centrality encouraged designers not only to produce new works, but also to reconsider the works of their predecessors. One landscape architect whose standing rose because of this new conceptual framework was Lawrence Halprin. Berleant, Spirn, and Howett allude to his explorations of a new environmental aesthetic based in the forms created by natural processes and experienced over time by the moving body.

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[33] Maurice Merleau-Ponty, *Phenomenology of Perception* (1962; reprint, New York: Routledge, 1994).

[34] Irwin, *Being and Circumstance,* 24. This book was an exhibition catalogue for two 1985 exhibits—at Pace Gallery, New York City, and the San Francisco Museum of Modern Art. Note the similarity between Irwin's writing and that by Dewey fifty years prior. "For to perceive, a beholder must create his own experience. And his creation must include relations comparable to those which the original producer underwent." Dewey, *Art as Experience,* 54.

[35] Irwin, *Being and Circumstance,* 23.

[36] Similarly, in the architectural academy and practice of the 1970s and 1980s, the boundaries of the pristine object-building and the surrounding amorphous landscape were called into question. Whether in the site plans of Michael Graves, the urban design plans of Colin Rowe's studios, the geological constructions of Stanley Saitowitz, the phenomenological explorations of Juhani Palasmaa or Steven Holl, the fictive site archaeologies of Peter Eisenman and Laurie Olin, or in the writings of Caroline Constant and Carol Burns, there were many examples of architects reflecting on the biases of their own disciplinary conventions and reenvisioning new relationships with the ground, natural processes, and natural histories.

Halprin's Phenomenal Landscape: A Precursor to the New Aesthetics of Environmental Engagement

Halprin's work represented a type of critical practice that gave form to ecological environmental values through the construction of experience. His projects were appreciated anew in the 1980s and 1990s by landscape architects who were searching for a middle ground between McHarg's formless environmental designs and Walker's landscape architecture-as-art objects.[39] To this generation, Halprin's work embodied many of the attributes advocated by Smithson and Irwin. In fact, Halprin might be considered to have developed a phenomenologically based language of landscape architecture, as he reconceptualized landscape space as bounded flow, a fluid medium experienced in a multisensory way by the moving body. He also developed new drawing tools for depicting landscape space and created an expanded morphology of landscape forms based on the direct observation of surfaces shaped by natural processes, such as erosion and deposition.

Halprin's *Sea Ranch* community, near Gualala, California (1961–67, 1993–), designed in collaboration with architects Charles Moore, Donlyn Lyndon, and Joseph Esherick, was a landscape design predicated on the experience of nature's processes, temporal structure and flows, and experienced by a body in motion, over time. As such, it subverted the design conventions of its time (Fig. 2). *Sea Ranch*'s site was a striated landscape of open meadows framed by monumental hedgerows running perpendicular to the Pacific Coast. Halprin's

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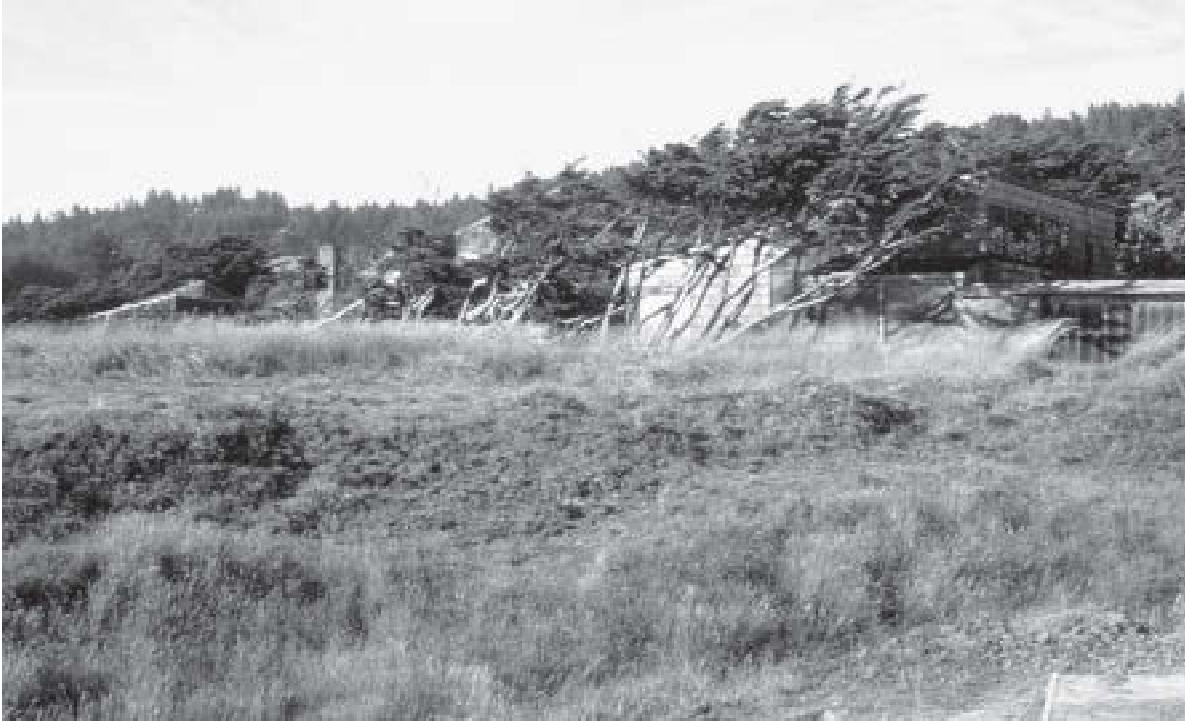
[37] Berleant, *Art and Engagement,* 32.

[38] Mara Miller, *The Garden as an Art* (Albany: State University of New York Press, 1993), 178. Miller summarizes how designed landscapes challenged the aesthetic criteria of modern art and how, in doing so, landscape architecture found itself allied with various postmodern art practices that were critical revisions of modern art. "Gardens point to the absurdity of a number of distinctions which continue to lie close to the heart of aesthetic theory, long after they have been abandoned by much of the practicing art world. In particular the garden, by providing an environment for experience rather than an object of experience, collapses the very foundation of modern aesthetic theory, aesthetic disinterest/distance, or the subject-object dichotomy. With it go concomitant notions of sharp distinctions between art and craft, fine and applied arts, and the utilitarian and the aesthetic."

[39] Two events that mark this renewed interest in Halprin's work include the 1986 San Francisco Museum of Modern Art exhibit, *Changing Places,* and the 1991 Harvard Graduate School of Design symposium, "Urban Ground."



2. Panorama of hedgerow houses, Sea Ranch, *California, by Lawrence Halprin Associates, 1962*

firm and his consulting scientists studied the site over the course of a year.[40] Their summary of this intensive environmental analysis included qualitative observations about the experience of the place, an ecoscore graphically depicting the forces of change over an expanse of geological time, and a synthesis of their site interpretations in the form of landscape and architectural design guidelines.[41] The resulting master plan reinforced the shaping processes of the landscape—grazing, the directionality of the wind, and the erosive power of the water—by clustering buildings and streets along the hedgerows and by leaving the meadows open.

The phenomenal experience of these varied ecosystems was one of strong contrasts. The residential streets along the hedgerows were shady, quiet, cool, and moist (Fig. 3). The public spaces of the meadows were sunny, loud with wind, warmer, and drier. Strolling along the bluff from hedgerow to hedgerow, a daily ritual of many residents, maximized

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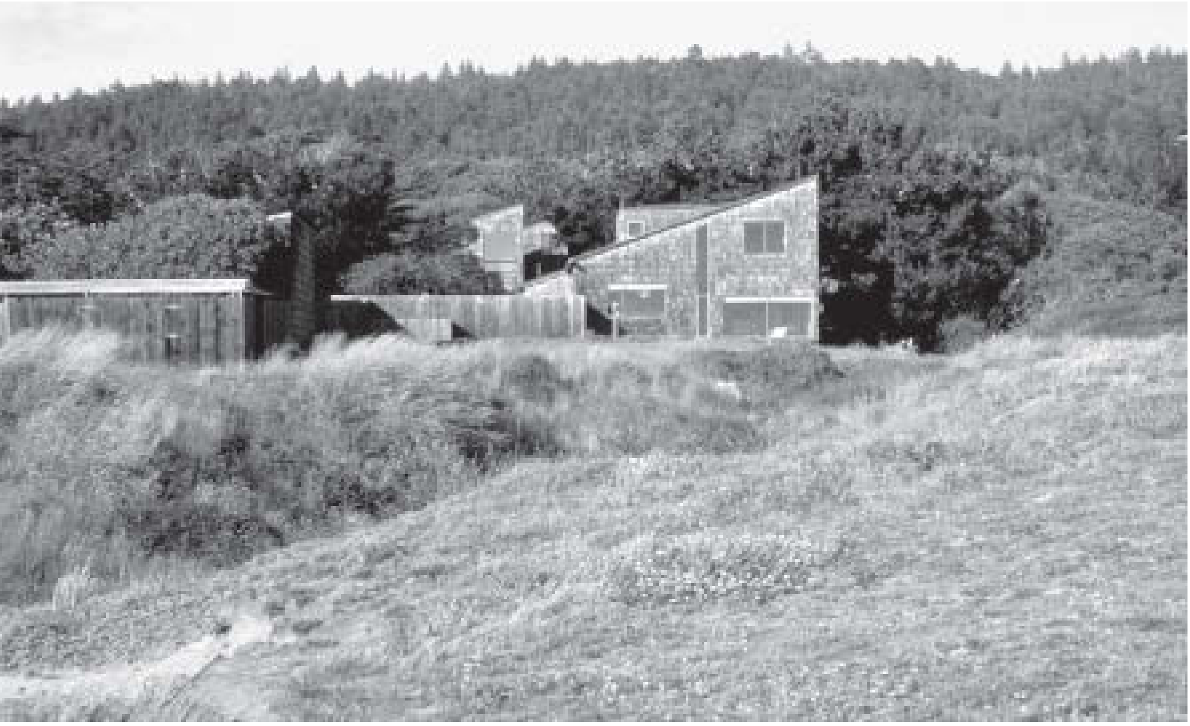
[40] Lawrence Halprin, *The RSVP Cycles: Creative Processes in the Human Environment* (New York: George Braziller, 1969), 118–47.

[41] "Sea Ranch Design Brochure," undated (available at Sea Ranch Lodge); Lawrence Halprin, *The Sea Ranch: Diary of an Idea* (Sea Ranch, Calif.: Comet Studios, 1995).



one's experience of these differences (Fig. 4).[42] Building design interpreted the site's wind patterns and made them manifest in sloping roofs that accommodated the breezes, while gardens or terraces were located on the sheltered sides of the houses. By working with the site's structure and character, Halprin created a memorable place, characterized by a vivid, staccatolike experience, from wet to dry, shady to sunny, calm to windy, quiet to noisy, that foregrounded the ways cultural and natural processes shaped and sculpted the land. Unlike many residential communities made up of homogeneous landscapes with equally spaced houses, set in a matrix of lawns and separated from one another by roads and cars, *Sea Ranch*'s landscape was a rich mosaic of meadow and hedgerow, with public walks that connected residences and fostered an engagement with the natural community.

Halprin's conceptual quarrying of the site for its experiential qualities, his interest in the shaping of landforms by natural processes over time, and his reading of the landscape as

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[42] Halprin wrote about the role of movement and experience in his design process in several works, including Lawrence Halprin, *Freeways* (New York: Reinhold, 1966); idem, *Cities* (Cambridge, Mass.: MIT Press, 1963, 1972; idem, "Motation" (1965), reprinted in *Lawrence Halprin,* ed. Ching-Yu Chang, Process Architecture 4 (Tokyo: Process Architecture, 1978), 51–62.

3. Hedgerow street, Sea Ranch, *California, by Lawrence Halprin Associates, 1962*

cultural and natural strata link his important works of the 1960s and early 1970s with the postmodern landscape works of the late 1980s and 1990s. Equally important, Halprin's conception of the landscape as a temporal medium, the body's role in the experience of place, and space as a qualitative, fluid presence contributed to a type of landscape architectural practice that is an art of environmental engagement. His design method, his formal vocabulary, and his multidisciplinary influences—from dance to ecology—foreshadowed the works that would follow two decades later.

Giving Form to Environmental Values: Constructing Experiences

Many projects that emerged since 1980 have attempted to reconcile the values of earlier ecological design, the operations of landscape as art, the systems aesthetics of environmental art. These works include those by Susan Child, Richard Haag, George Hargreaves, David Meyer, Laurie Olin, Martha Schwartz, Ken Smith, and Michael Van Valkenburgh.[43]

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[43] This paper is focused on built works, but it should be noted that dozens of young designers are exploring these issues in their work in graduate design studios, speculative projects, and competitions. Julie Bargmann, James Corner, Mark Klopfer, Anu Mathur, Keith McPeters, Kathy Poole, Jane Wolff, and Alexis Woods, among others, have taken these built works and the theories that underlie them as a point of departure for further development of open-ended compositions that readily accept change and flux as a precondition for working with the landscape medium. An exhibit curated by Brenda Brown, entitled *Eco-Revelatory Landscapes,* at the University of Illinois at Champaign-Urbana (fall 1998), addressed this speculative and hypothetical work. The exhibition catalog is a special issue of *Landscape Journal* (1998), with Brenda Brown as guest editor.

4. Meadow swales, Sea Ranch, *California, by Lawrence Halprin Associates, 1962. The slow pace of walking reveals subtle changes, such as the textural differences of plants in the shallow swales that run through the meadows. At these modest bridges, a walker understands that these small linear depressions that drain water from the uplands slowly carve the extraordinary faces of the adjacent rock bluffs leading to the beach.*

Though these designers depended on the earlier experiments of the 1960s and 1970s, they were critical of various aspects of those works. They eschewed the intrinsic oppositions that differentiated ecological design and landscape as art—the ecological versus the formal, the system versus the object, the environmental versus artistic. Instead, they made the environment legible to a culture distanced from the natural world by employing the materials and processes of nature. Such experiments frequently resulted in the construction of an "aesthetic of experience" rather than an "aesthetic of objects."[44]

What was to be gained by imagining landscape architecture as the construction of aesthetic experiences that focused attention on nature's forces and flows? By creating places of wonder and beauty, landscapes of strong textural or scale juxtaposition, and ecological spaces of ever-changing mood and character, landscape architects provided occasions for humans to revel in the moment and to feel connected to a place. In brief, by setting a site in motion or registering changes over time, landscape architects translated their ecological environmental values into a new design language that was dynamic, fluctuating, and process oriented. The open-ended nature of this work, not completed when construction was done but constantly modified by the flow of people and natural processes through the site, contrasted with the static, idealized public landscape that accommodated human activity and natural phenomena but was not affected by them. The dynamic qualities of this new work facilitated unexpected experiences and further interpretations that might inculcate a new environmental awareness or perhaps even a new ethic in those who lived, worked, and played in these designed landscapes. Thus, ecological environmental values were not only embodied in the work, but also engendered by it.

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[44] Miller, *The Garden as an Art,* 178.

Though theories of place making, phenomenology, and site art provided bridges for landscape architects experimenting with ways to make environmentalism manifest in their work, they also posed new challenges. Landscape architects, unlike architects and artists, work with a medium that is also their subject and canvas. This special condition has raised theoretical dilemmas for landscape design since its embryonic stages as a separate discipline from painting or architecture, as evidenced in the nineteenth-century writings of J. C. Loudon and Mariana Van Rensselaer or, more recently, in Mara Miller's *The Garden as an Art*.[45] These theorists and critics speculated about how one could design with the materials of nature, in the place of nature, and about the content of nature and not have the result be confused for nature itself. How could it be recognized as art? The late-twentieth-century response to these questions came, on the one hand, from the larger art and design community that was challenging its own biases toward bounded, objectlike works and, on the other, from the explorations of landscape architects into new design codes and strategies that attempted to find formal languages and ideas in natural processes rather than in ideas gleaned from other art forms. Hence, changes in theories from outside and from within the discipline of landscape architecture intersected in the 1980s, creating fertile ground for landscape architects.

Giving Form to Invisible, Phenomenal Natural Process

The last fifteen years have produced a number of landscape projects that have taken their starting point from environmental artworks, such as Robert Smithson's process pieces, like *Glue Pour* and *Asphalt Rundown* or Robert Irwin's explorations of a specific site's ephemeral and dynamic qualities, such as light and color. Of the many landscape architects whose works have tested strategies for making process and phenomena the subject and content of

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[45] "[G]ardens violate a number of implicit preferences upon which most theory of art is premised—preferences for a single final form of a work of art (for uniqueness and perdurance), for artistic (or authorial) control by a (single) (human) agent, for immateriality, and for what is known as 'disinterest' or 'distance' or 'autonomy.'" Miller, *The Garden as an Art*, 72. Miller was summarizing the garden as an art conundrum from a twentieth-century perspective, but these concerns also troubled critics and designers in earlier centuries. Mariana Van Rensselaer, the prominent critic and early advocate for the profession of landscape architecture, noted the following obstacles to the recognition of landscape architecture as an art: it looks too much like nature, its results are unstable, and "our lack of clearly understood terms with which to talk about it." Mariana Van Rensselaer, *Art Out-of-Doors* (New York: Charles Scribner's Sons, 1893), 6–7. Loudon's theoretical response to Quatremere de Quincy's banishment of landscape gardening from the fine arts has been excellently summarized by Melanie Simo, *Loudon and the Landscape: From Country Seat to Metropolis, 1783–1843* (New Haven: Yale University Press, 1988), 172–73.

5. Perspective, Wetlands, Civic Storm Water and Contingent Spaces, *Carr's Hill precinct, University of Virginia, by Kathy Poole, 1997. This speculative project for the campus pairs storm-water infrastructure improvements with significant academic and cultural settings, such as classrooms, entry courts, theater lobbies, and boating ponds. By intermingling natural processes and daily social routines, Poole created a model that overcame the limitations of a phenomeno–logical design in which personal experience and revelation predominate. (drawing: courtesy of Kathy Poole)*

their work, George Hargreaves and Michael Van Valkenburgh have left the most documentation of their intentions, both in writing and in built landscapes.[46] Still, they do not have a monopoly on these issues, as evidenced by the extraordinary graduate student work produced over the last ten years. From final semester projects to first-year studio sketch problems that create instruments and experiences for revealing natural process, student interest in the nonvisual aspects of the landscape is pervasive. As former students of designers like Van Valkenburgh, such as Kathy Poole, have developed their own practices, they have increasingly imbued these process explorations with even more cultural content (Fig. 5). Collectively, these speculative and built works map out a territory for exploring the temporal aspects of the landscape and the open-ended nature of the design process. A design proposition might set a site in motion, construct a catalyst for future change, or provide a datum against which to register change through such processes as deposition and erosion.

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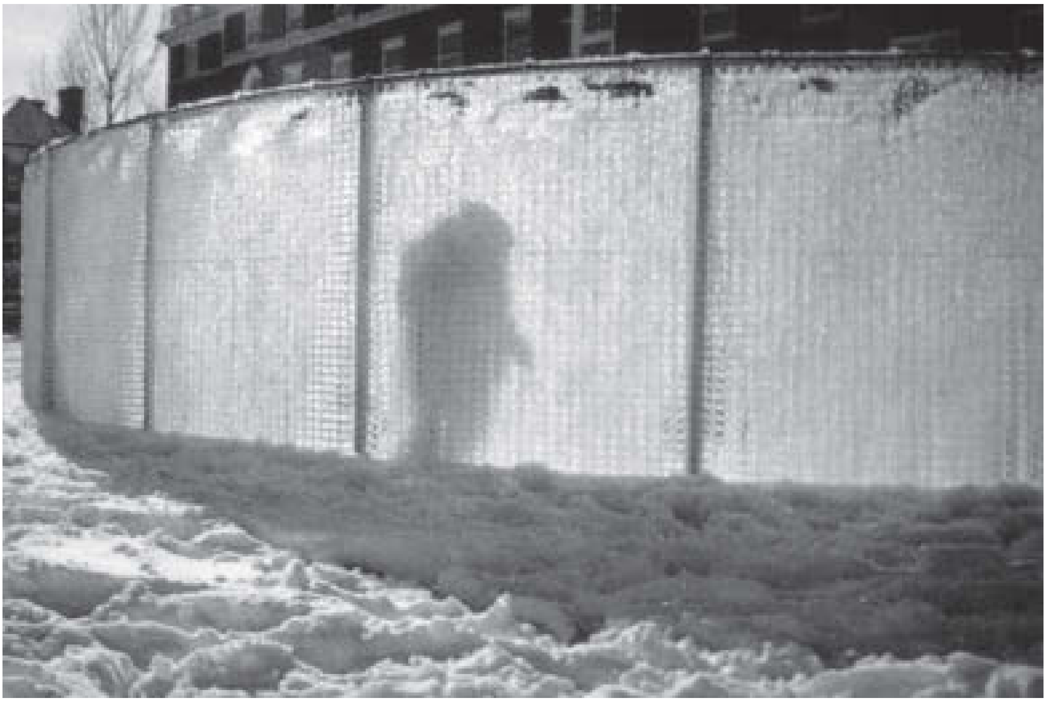
[46] George Hargreaves wrote about Smithson in "Postmodernism Looks Beyond Itself," *Landscape Architecture* 73, no. 4 (July/August 1983): 60–65, and "Most Influential Landscapes," *Landscape Journal* 12, no. 2 (fall 1993): 177.



6. Ice Wall *series, Cambridge, Massachusetts, by Michael Van Valkenburgh, 1986–88. These explorations of the winter landscape, transformed by the accretion of luminous layers of ice that collected as misting water slowly dripped down thin metal scrims of chain link and welded wire mesh, were landscape versions of Robert Irwin's interior and exterior scrim installations. The layering of opaque and translucent surfaces lit from various sources created fantastic spaces of complexity and illusion. (photo: courtesy of Michael Van Valkenburgh Associates)*

Van Valkenburgh's *Ice Wall* series (1988–90), built on campuses and in private gardens in the Boston area and on Martha's Vineyard (Fig. 6), was initiated through speculative work funded by the NEA and explored in *Eudoxia,* Van Valkenburgh's entry in the 1986 exhibition *Transforming the American Garden.*[47] These projects, like Van Valkenburgh's explorations of plant form explorations in his gardens and public landscapes, belie the idea that landscape space is open or empty. They also make the point quite explicitly that landscape space is temporal, not constant and unchanging. Hence, a particular landscape space, such as the Radcliffe *Ice Walls,* could be many places over the course of a day, depending on the angle of sun, the thickness of

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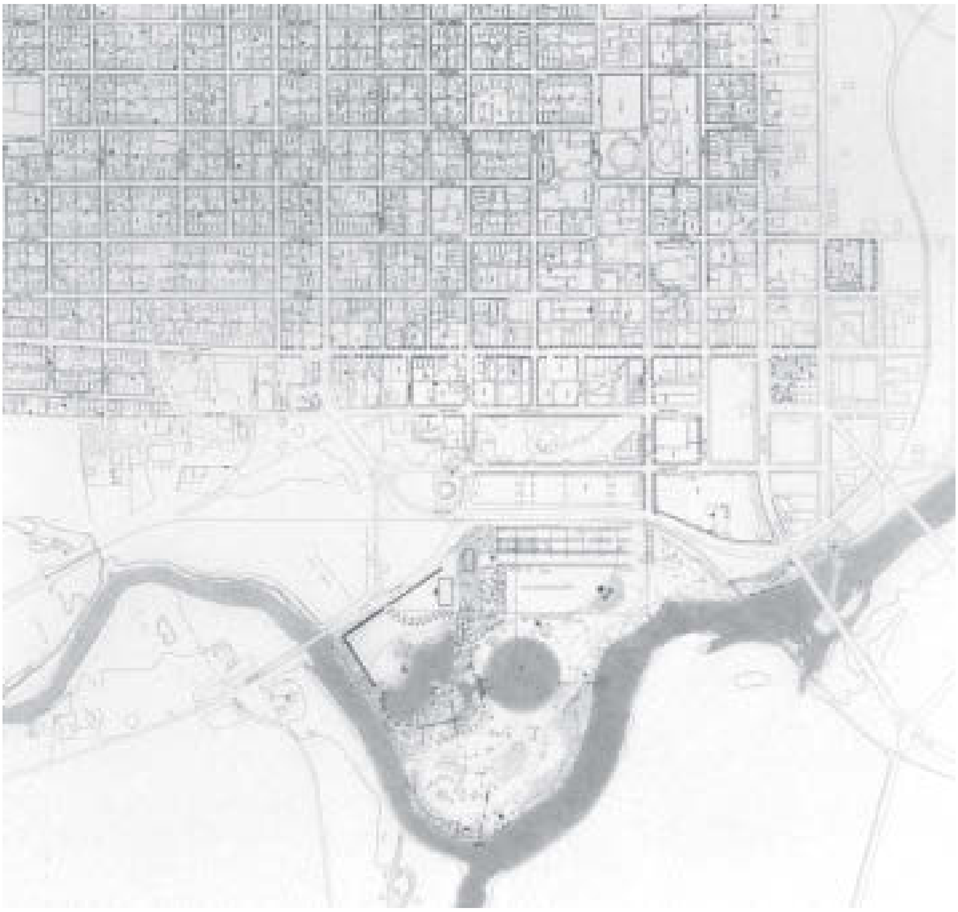
[47] Michael Van Valkenburgh, *Transforming the American Garden: Twelve New Landscape Designs* (Cambridge, Mass.: Harvard University Graduate School of Design, 1986), 20–23. See also Paula Deitz, "Private Visions," in *Design with the Land: Landscape Architecture of Michael Van Valkenburgh,* ed. Brooke Hodge (New York: Princeton Architectural Press, 1994). These projects were the only landscape projects included in a 1995–96 Museum of Modern Art exhibit on recent design projects exploring the luminosity and translucency of walls. See Terence Riley, *LightConstruction* (New York: Museum of Modern Art, 1995).



7. *Site plan,* Mill Race Park, *Columbus, Indiana, by Michael Van Valkenburgh Associates, 1989–93 (plan: courtesy of Michael Van Valkenburgh Associates)*

the ice, and the position of the viewer. This environmental spectacle foregrounded the processes of nature, making them evident, even magical. This sort of temporary installation thus made the environment visibly temporal, much as Peter Walker and Martha Schwartz's temporary installation, *Necco Garden*, a parterre of pastel candy wafers and automobile tires constructed at MIT's Baker Quadrangle (1980), made the landscape surface visible. This act of recognition might be understood as a first step toward developing an aesthetic awareness and environmental appreciation of hydrological processes such as freezing and thawing, with their attendant accumulation, crystallization, and dripping.

Van Valkenburgh's keen observation of process and phenomena resulted in a number of small projects, such as the *Isaacs Garden,* Cambridge (1986), and the *Krakow Garden,* Martha's Vineyard (1990), which were laboratories for his later public work in parks. At *Mill Race Park* in Columbus, Indiana (1989–93), an eighty-five-acre park built between the western edge of Columbus and the White River (Fig. 7), Van Valkenburgh cut and filled the flood plain to create pools and mounds and then choreographed circuit walks and drives

8. Water sluice, Mill Race Park, *Columbus, Indiana, by Michael Van Valkenburgh Associates, 1989–93 (photo: courtesy of Michael Van Valkenburgh Associates)*

through the park.[48] Rather than merely accommodating the river's floods, the park's sequences and events celebrate the water level's rise and fall and concretize the city's relationship to the river. As in Halprin's work, the spatial figures are not clearly bounded by geometry, but by movement from event to event or moment to moment. The first of the major events that one encounters when entering the park from Fifth Street is a crescent-shaped amphitheater. This earthwork is oriented northeast and toward the minor events that cluster around it—a parking field, a playground, a horseshoe pit enclosure, a picnic shelter, and rest rooms. From this recreational precinct, one sees the second event, a pool 450 feet in diameter lined by small trees and surrounded by a covered bridge, a picnic shelter, a rest

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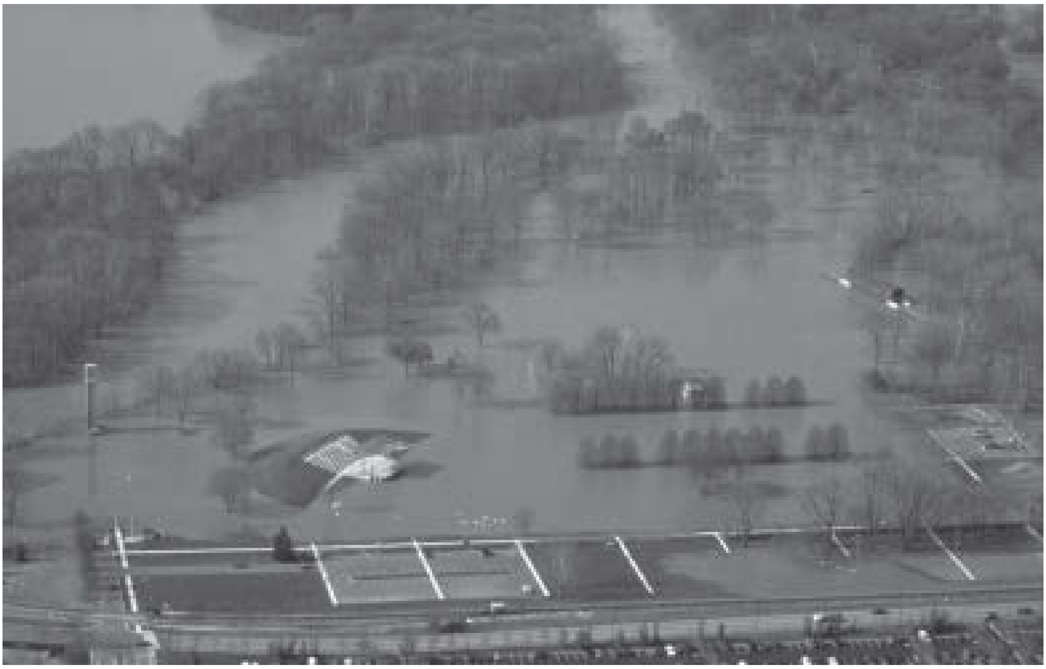
[48] John Beardsley, "In the Works: Public and Corporate Designs," in Hodge, *Design with the Land,* 18–27; idem, "Mill Race Park: Rescuing Death Valley," *Landscape Architecture* 83, no. 9 (September 1993): 38–43.



9. Aerial photograph during a flood, Mill Race Park, *Columbus, Indiana, by Michael Van Valkenburgh Associates, 1989–93. The elevated plinth of the playground and the high masses of the amphitheater and lookout mound register the fluctuation of the river level and function as memory devices. (photo: courtesy of Michael Van Valkenburgh Associates)*

room, and a sluice that controls the pool's water level relative to the level of the river. An adjacent irregularly shaped pond, a remnant of prior industrial processes on the site, structures the third precinct. Its perimeter walks connect and collect the covered bridge, a boat house, a dam, a boat landing, a basketball court with earthwork bleachers, a lookout, and the horseshoe pit enclosure. The fourth event, another earthwork mound, is immediately north of the irregular pond. Created from the excavation required to construct the circular pool, the mound acts as an edge to the park as well as a prospect from which to view the river.

The events, both large and small, register the presence and power of the river in varied ways. Most dramatic, during the flood stage only the elevated structures are visible from the city's edge. During seasonal flooding, the amphitheater, mound, and earthen bleachers are transformed into separate, geometric islands within the swollen river. Even during dry periods, however, there are clues that the park occupies a flood plain. The floors and walls of small structures, such as the rest rooms, hover above the ground on structural columns, so that flood waters can flow under them.[49] The picnic shelters sit atop slightly elevated floors

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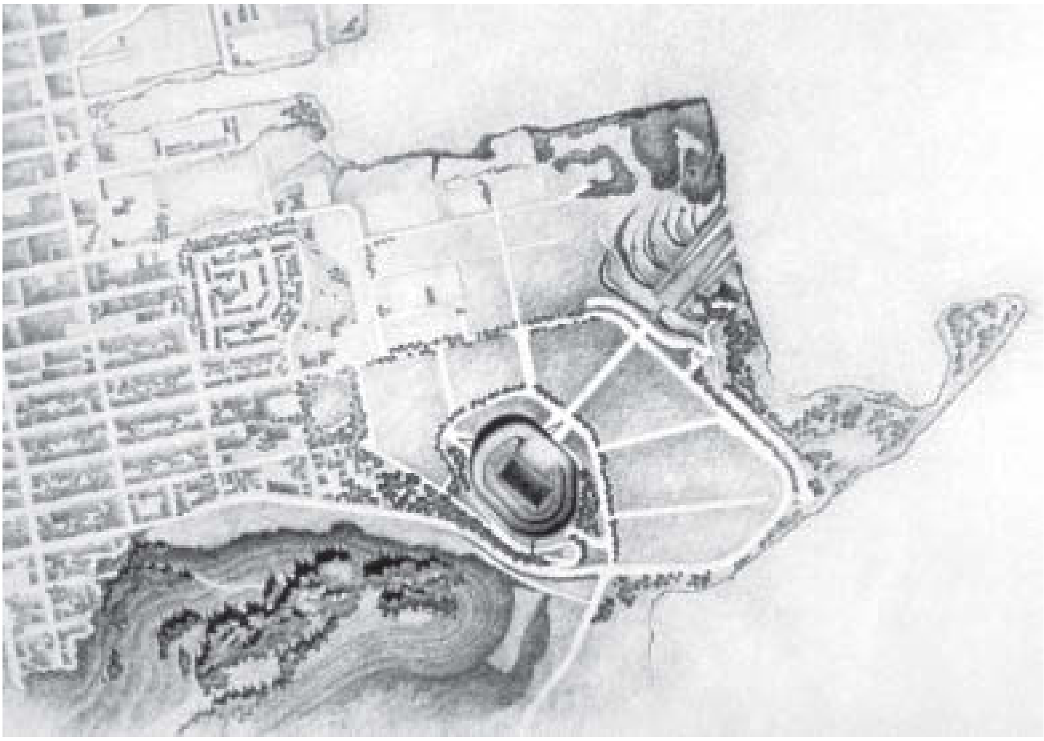
[49] The buildings were designed by architect Stanley Saitowitz.

10. Landform model of Candlestick Point Cultural Park, *San Francisco, California, by George Hargreaves, 1985–93 (photo: courtesy of George Hargreaves Associates)*

protecting them ever so slightly from wet land below. The most prominent gesture toward the water is at the confluence of the two tributaries that form the White River. Here, four small events, a linear arbor aligned with the western tributary, a rest room, a picnic shelter, and a hairpin-shaped vista walk, gather to celebrate the rivers that give *Mill Race Park* its identity and its boundaries (Fig. 8). All of the major events, as well as this cluster of river activities, are connected by a park drive and river walk so that they can be experienced as a set of related events and spaces as well as separate precints.

For a critic or student accustomed to the geometric clarity and singular gestalt of many modern and classical landscapes, the park's site plan is difficult to decode. Yet a close look at site conditions reveals a careful pairing of each program with its site location (in plan and section) and of each principal park event with its relationship to the river. To use Irwin's term, the structure of the park is site conditioned, meaning it is not dependent on some a priori sense of composition or typology. Its forms and spaces are the result of the designer's reading of the site from the dual perspective of perceiver and conceptualizer. The cyclical processes of river flooding, occurring at longer intervals than those explored in the *Ice Wall* series, introduce memory into one's experience of the park (Fig. 9). Hence, the structure of the park is dependent as much on the temporal as the spatial, on memory as much as immediate experience. These characteristics bind *Mill Race Park* to postmodern picturesque theory,



11. Site plan, Candlestick Point Cultural Park, *San Francisco, by George Hargreaves Associates, 1985–93 (photo: courtesy of George Hargreaves Associates)*

as redefined by Yves-Alain Bois and Robert Smithson, as well as to site-specific environmental art.[50] The bodily experience of moving through this public landscape and participating in the town's annual rituals and celebrations over time—whether a school year, a childhood, or a lifetime—is key to this experience.

Much as *Mill Race Park*'s forms and spaces are shaped by the designer's reading of the site as a place formed and defined by the flow of water, *Candlestick Point Cultural Park*'s sculpted landforms manifest the wind's formidable forces (Fig. 10). Twenty-five years after Halprin and his colleagues designed *Sea Ranch* by responding to the flow of wind and water across a California coastal site, and less than five years after Peter Walker and the SWA Group layered thin planes of stone lines, grass surfaces, and water basins into a Fort Worth plaza parterre called *Burnett Park* (1983), George Hargreaves and his collaborators, environ-

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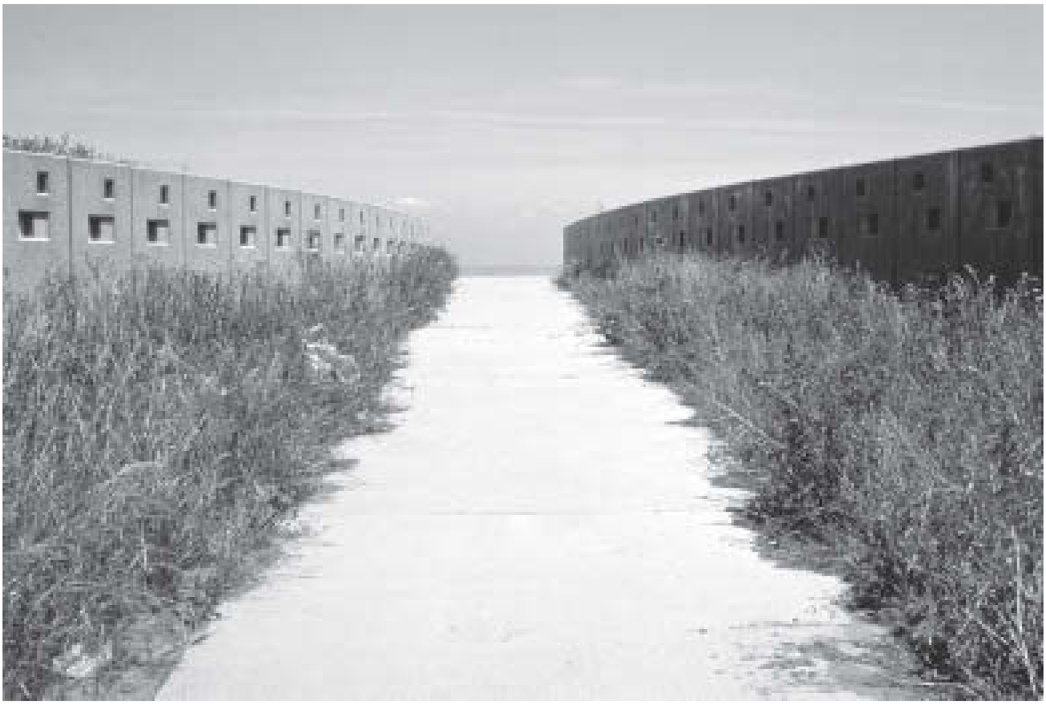
[50] Yves-Alain Bois, "A Picturesque Stroll around Clara-Clara," *October* 29 (summer 1984): 32–62; Robert Smithson, "Frederick Law Olmstead [*sic*] and the Dialectic Landscape," in Holt, *Writings of Robert Smithson,* 117–28. While a contemporary understanding of the nonvisual aspects of picturesque theory is quite widespread due to the recent historical writings of Anne Bermingham, Stephen Daniels, and John Dixon Hunt, as well as the theoretical recovery of the picturesque by artists and theorists such as Robert Smithson, Sidney Robinson, and Yves-Alain Bois, most landscape architects in the 1950s and 1960s understood the picturesque and the pastoral through modern eyes. For them, it was an appropriately soft, noncompeting, sylvan, visual backdrop or frame for bold, assertive, objectlike buildings.



12. Wind gate, Candlestick Point Cultural Park, *San Francisco, by George Hargreaves Associates, 1985–93. This "wind gate" registers the directionality of the late afternoon winds flowing around and over the four-hundred-foot hill and stadium to the west (see Figs. 11 and 13). When the afternoon wind blows from the west, an almost daily phenomenon, a visitor walking toward the water experiences a strong wind from behind and a whistling sound emanating from the gate's walls, which act as environmental whistles.*

mental artist Doug Hollis and architect Mark Mack, created *Candlestick Point Cultural Park* (1985–93), an eighteen-acre park on San Francisco Bay, which is indebted to both.[51] The sculptural shaping of the ground into an elongated, tapered terrace bounded by narrow channels and flanked by a repetitive field of crescent-shaped mounds derives its emphatic form and directionality from the pervasiveness of an offshore breeze that characterizes Candlestick Point (Fig. 11). This sensibility that looks to natural processes and phenomena as the genesis of objectified landscape form and aesthetic experience, builds not only on the works of Halprin and Walker however. Smithson and Irwin's interests in process and the extraction of conceptual ideas from a site's existing sense data is also manifest in *Candlestick Point Cultural Park*.[52]

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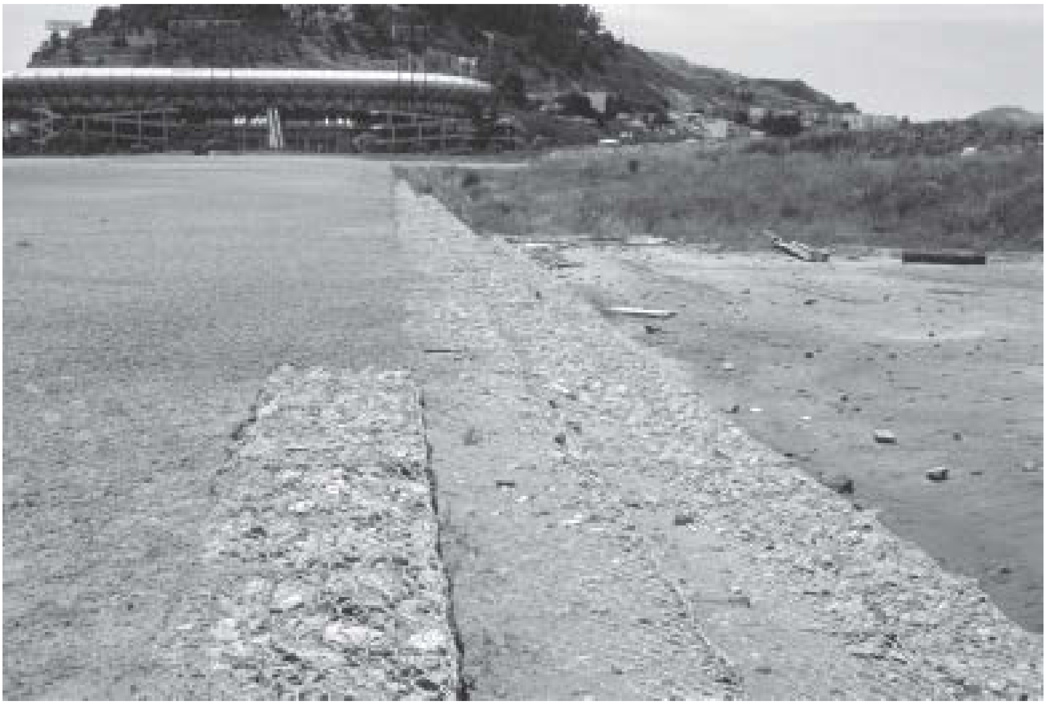
[51] See Susan Rademacher Frey, "A New Theatre of Collaboration," *Landscape Architecture* 77, no. 3 (May/June 1987): 52–59, for one of the earliest descriptions of the park and the designer's process. I first visited the park in the summer of 1993.

[52] The writings of the art historian and critic of the contemporary landscape John Beardsley, especially "Entropy and the New Landscapes," in *Hargreaves: Landscape Works,* Process Architecture 128 (Tokyo: Process Architecture, 1996), have made the clearest connections between Smithson's theories and practices and the evolution of Hargreaves's work in the 1980s.



13. Promenade to the bay, Candlestick Point Cultural Park, *San Francisco, by George Hargreaves Associates, 1985–93. The edge between the lawn and channel is defined by low steps constructed of gabions, wire-mesh boxes filled with stone rubble—a constructed version of the detritus found in the channels.*

From the parking lot, the park is entered through a narrow opening between linear earth mounds secured by 130-foot-long concrete walls (Fig. 12). The mowed lawn terrace tapers down toward the water, as if the strong wind had shaved its surface. The wind and gravity compel one toward the water's edge to see around the point and gaze at the distant horizon of water and hills. The terrace's manicured lawn contrasts with the coarse flotsam of rock, wood, and sediment deposited in the channels by the rise and fall of the tidal bay. Paths lining the terrace lead to promenades, which separate the terrace from perimeter mounds (Fig. 13). These wildflower-covered mounds recall dunelike landforms shaped by aeolian processes (Fig. 14).

Hargreaves has described this place as an "environmental park," as opposed to a nature study area.[53] Its visitors can experience its specific qualities in the same way its designers as perceivers did during their frequent site visits. No exhibits or interpretative signs intrude on its visitors' experience of this environment. Rather, the park plots a series of interactions, movements, and engagements with the environment—the forces of which can literally move its visitors, just as it can shape the changing boundary between land and water.

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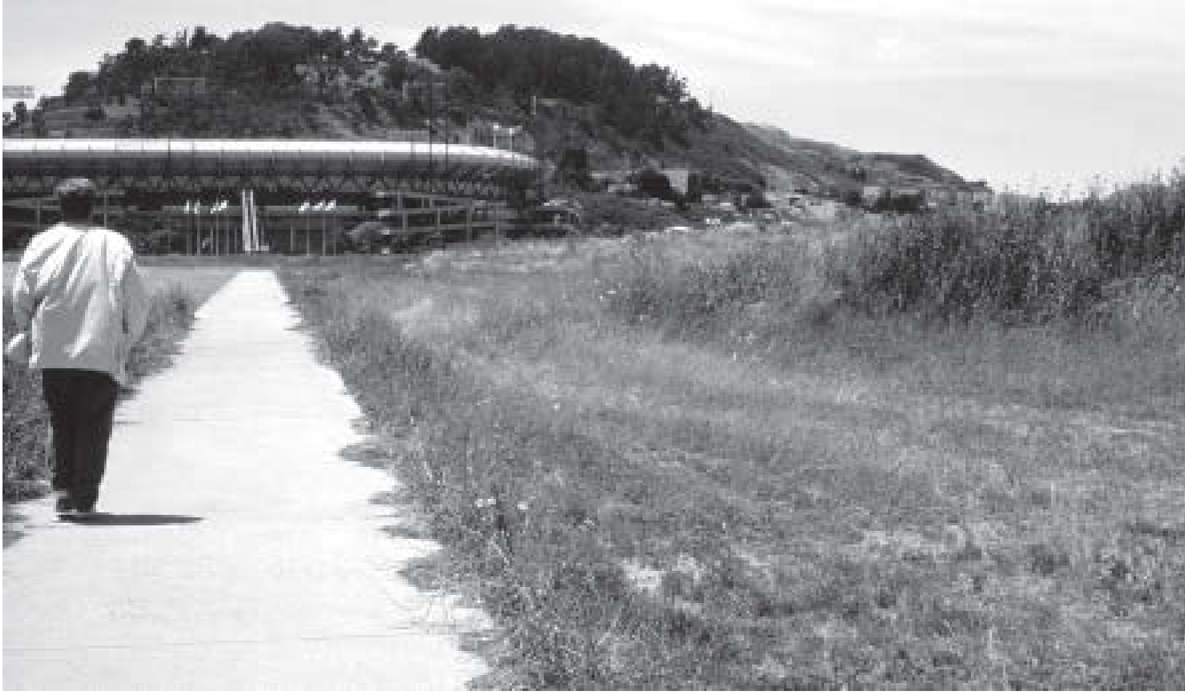
[53] Frey, "A New Theater," 59.



14. Panorama of aeolian mounds, Candlestick Point Cultural Park, *San Francisco, by George Hargreaves Associates, 1985–93. The walk to the shore is bounded by dry mounds and wet tidal channels. The landforms' "backslope," concave in plan and section toward the wind, and the "slip face," convex in plan and section on the leeward, create an armature and habitat for varied plant growth—dry and high versus moist and low—and human use—exposure versus protection.*

The shaping of the landforms and the primary spatial sequences around them refer to, and rely on, the site's wind processes in varied ways: they channel and deflect the wind's flow to create a rhythmic experience of calm and force, sound and silence, stillness and movement; they allude to other forms shaped by the wind, such as the aeolian dunes; and they create various microclimates that create diverse habitats of volunteer grasses and wildflowers to supplement those planted on the site. In its capacity to function as an arena for the performance of the site's invisible processes, *Candlestick Point Cultural Park* shares an affinity with works by Robert Irwin and, more directly, with the early works by Doug Hollis, such as his *Sound Garden* (1981–83) at the NOAA Headquarters outside Seattle.[54]

But the park is more than a theater of environmental spectacle. The stark juxtaposition between the cultivated and the natural is about more than interesting visual contrasts. The

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[54] Patricia Fuller, *Five Artists at NOAA: A Casebook on Art in Public Places* (Seattle, Wash.: Real Comet Press, 1985). This catalog describes the site-specific artworks, including Hollis's *Sound Garden,* installed on the grounds of the NOAA headquarters.

aesthetic experience of walking between these two types of landscape is accompanied by an increased awareness of the environmental implications of their differences. The former, mowed and green, requires not only watering, but also fertilizers and herbicides to maintain its everlasting constantness. The latter, rough and tawny, requires only an annual mowing and the movement of seedpods by wind, water, and birds across the site.[55] If phenomenal art or the phenomenology of design, in Irwin's and Norberg-Schulz's respective terms, requires an awareness of both the fleeting phenomena and tactile character of a place as well as the nature of its construction, *Candlestick Point Cultural Park* falls well within this genre. Its sensuousness and tactility fosters a recognition that landscapes are human constructions and that the various ways of making and maintaining them carry long-term consequences for the health of the larger ecosystem.

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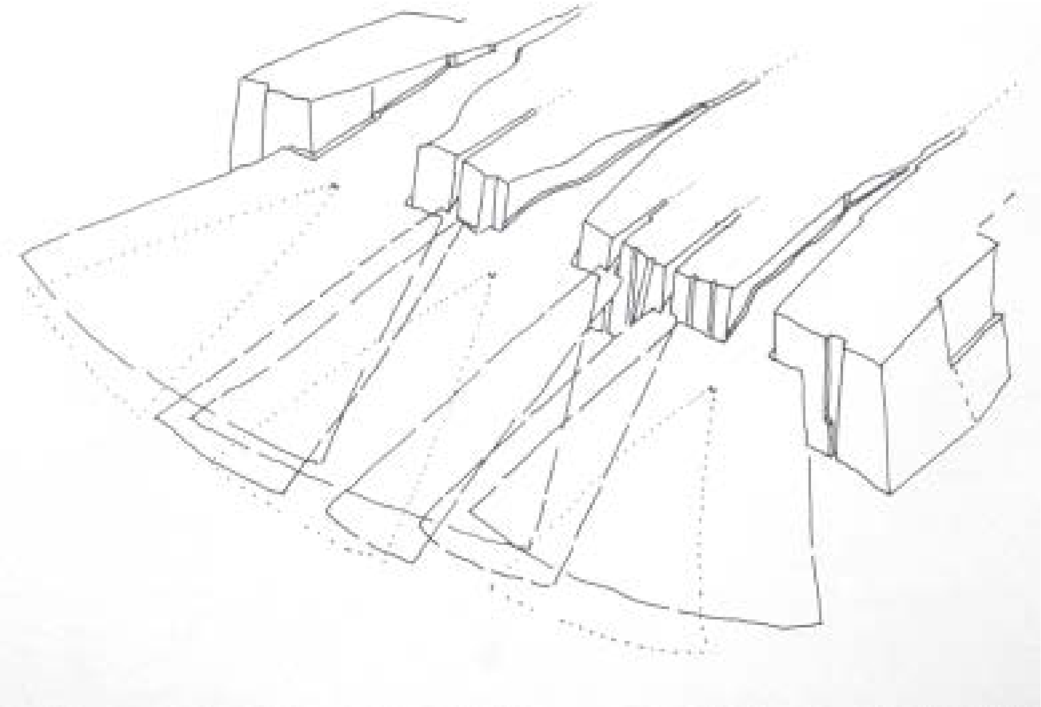
[55] I first developed this reading of *Candlestick Park* in a short essay, "Theorizing Hargreaves' Work as a Post-modern Practice," in *Hargreaves: Landscape Works,* 138–40.

15. Clay study model of a landform sculpture exercise, 1992, Department of Landscape Architecture, student work, Harvard Graduate School of Design

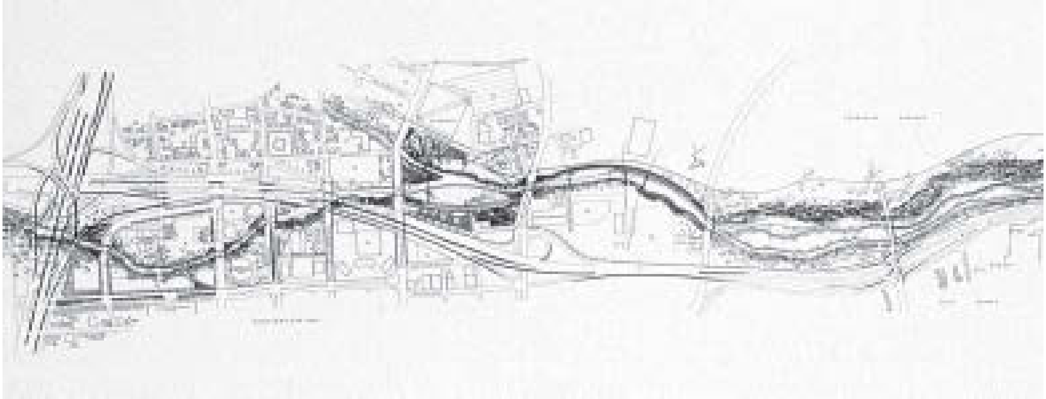
Mill Race Park and *Candlestick Point Cultural Park* illustrate the possibilities of a landscape design process open to new forms and arrangements revealed during a close study of a site's natural processes. Both these projects allow us to experience the richness of a postmodern landscape construed more through temporal and spatial sequences rather than through the landscape conventions of the scenic and the visual. For the midwestern urban park, the result is a nonhierarchical, overlapping series of moments experienced around prominent low and high places in the flood plain. Space varies according to the rhythms and forces of the river's flows, as well as the rhythm of an individual's visits. The spaces of the West Coast state park are full of the prevailing wind's force and direction, which shape the land and structure one's experiences. Moreover, these projects establish a parallel experience for the park's designer and visitor. Both are active, engaged perceivers of the place, gaining an appreciation for and understanding of the dynamic land-shaping forces of wind and water. This emphasis on processes notwithstanding, these projects also rely on objectification of landform and landscape space, albeit in nonhierarchical arrangements or non-Euclidean geometric forms.



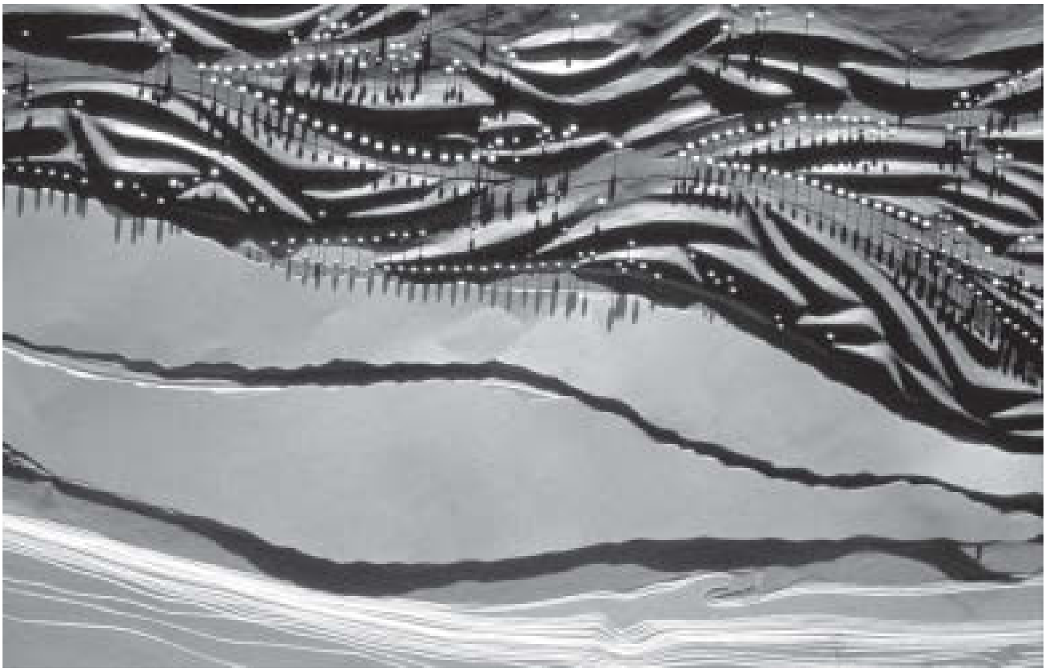
16. Geomorphic conversation—decomposition of a mountain to a plain (from William Morrish, Civilizing Terrains *[Minneapolis: Center for the Design of the American Urban Landscape, 1989], fig. 43)*

Giving Form to the Neutral Field: Landform as Mass and Figure

From an environmental perspective, one of the problems with the normative design languages of twentieth-century American landscape architecture was its lack of nuance. Too often, a geometric plan is associated with the realm of man and the constructed, while a curvilinear plan is imagined to be natural, even undesigned. Because of such formal limitations, the relationship between the man-made and the natural translated to a relationship of differences, rather than reciprocities. A parallel set of assumptions on the part of many modern architects was that all buildings are conceived for sites that are metaphorically "natural" (an informal arrangement of plants and outdoor spaces will invoke that metaphor), yet when the site is imagined as natural, or informal, it can only be from a limited formal and nonecological perspective. In such a worldview, Euclidean geometry has a monopoly on form; form and order in nature do not exist. This rigid worldview on the part of modern architects and, by extension, many who develop the land conspired with other forces, such as the economically based system for valuing the land, to marginalize the environment as a medium of design form and order. Without the development of form languages based on such environmental processes as land formation, even the best ecological planning might result in "informal" designs on the most ecologically appropriate parcel of land.



17. Plan, Guadalupe River Park, *San Jose, California, by George Hargreaves Associates, 1988– (plan: courtesy of George Hargreaves Associates)*



18. Earthwork model, Guadalupe River Park, *San Jose, California, by George Hargreaves Associates, 1988– . Recalling the patterns of braided river channels that flow around exposed accumulations of sediment deposited by receding floodwaters, this monumental earthwork is quite different from the singular, figural quality of* Candlestick Point Cultural Park's *great terrace. Moreover, the earthworks at* Guadalupe *are intended to perform environmental work over time. This artificial braided earthwork, made of hundreds of triangular cuts and fills, parallels the river banks in the northern sector of the park. (photo: courtesy of George Hargreaves Associates)*

In the writing of the urban designer William Morrish, author of *Civilizing Terrains* (1989), and in the public parks by George Hargreaves and his partners, Mary Margaret Jones and Glenn Allen, one finds evidence of explorations into new designed landform types derived from geomorphology (Fig. 15) and how those forms might constitute a new "urban ground."[56] Morrish's beautifully illustrated manifesto (Fig. 16) was written to "illustrate some basic notions of the origins of integrating land and built form together into a comprehensible system."[57] Hargreaves's landform grammar, perhaps most evident in his study models for *Guadalupe River Park* in San Jose and in his study drawings for the Parque do Tejo Trancao competition in Lisbon, consists of a sculptural vocabulary that expands the Euclidean repertoire of cones, pyramids, and orthogonal terraces to include the striking and recognizable forms of drumlins, eskers, barchan dunes, and braided linear mounds. Like Morrish's designs, Hargreaves's geomorphologically derived landforms mix freely with geometrical forms, creating sculptural complexity while reconceptualizing the boundaries between the built and the natural. In Morrish's lexicon, this promiscuous mixing results in settlements that emerge from the structure and form of the land. Like the writings of the architectural critics Carol Burns and Kenneth Frampton, Morrish's manifesto calls for a design practice that does not assume some abstract tabula rasa as the preexisting condition of designing.[58] Instead, by acknowledging the significance of a region's topography—steepness of slope, aspect, and geomorphology—as a generator of form, the landscape architect can begin to overcome the placelessness that a "cleared site" strategy perpetuates.[59]

For Hargreaves, this mixing of forms makes evident the artificiality, or the constructed nature, of his urban landscapes. His efforts to reclaim industrial riverfronts and to manage floodwaters do not mask human creativity and construction under a veneer of pastoral informality. Rather, the interdependence of natural and human processes in such projects is manifest in the interdependence of geomorphological and geometrical forms. At *Guadalupe River Park,* a three-mile-long recreational/storm-water control project (Fig. 17), Hargreaves replaced an engineer's vision for managing the river's floodwaters inside seventeen-foot-high walls with a constructed floodplain of varying widths.[60] The form and character of the floodplain vary depending on the adjacent urban conditions—proximate cultural institutions, road overpasses, and a recently demolished neighborhood. Near the former neigh-

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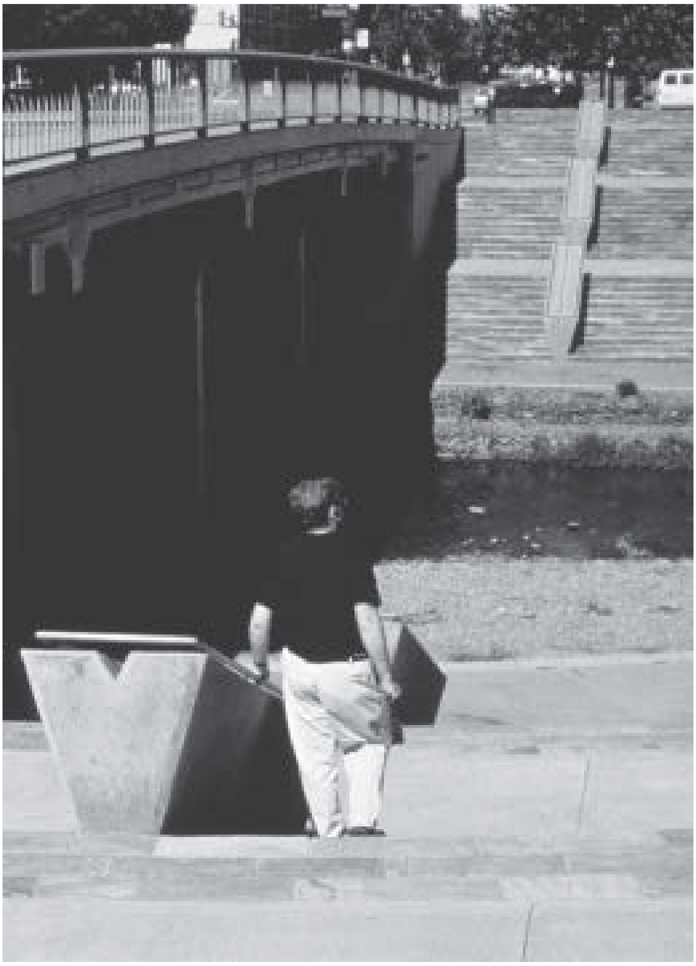
[56] This is especially true in *Guadalupe River Park,* San Jose, Calif. (1988–), *Waterfront Park,* Louisville, Ky. (1990–present), and the Parque do Tejo Trancao competition, Lisbon, Portugal (1994–95). Such explorations also figured in the landform and grading exercises done by Harvard's landscape design graduate students under Hargreaves's direction (1992–). These exercises were taught by Gary Hilderbrand, George Hargreaves, and the author.

[57] William Rees Morrish, *Civilizing Terrains: Mountains, Mounds, and Mesas* (Los Angeles: Design Center for the American Urban Landscape, 1989), iii.

[58] Carol Burns, "On Site," in *Drawing/Building/Text,* ed. Andrea Kahn (New York: Princeton Architectural Press, 1991), 146–67; Frampton, "Towards a Critical Regionalism."

[59] Burns, "On Site," 149–51.

[60] Jane Brown Gillette, "River Runs through It," *Landscape Architecture* 88, no. 4 (April 1998): 74–80, 92–96, contains the most recent and thorough account of this project at the early stages of its completion.



19. Urban section, Guadalupe River Park, *San Jose, California, by George Hargreaves Associates, 1988– . When the river intersects with the city street above, its banks transform into stairs scaled to the human body. One enters the river's realm from sturdy stairways, which "erode" into the banks.*

borhood, downstream of the city, the park's surface is made of elongated, streamlined mounds and hollows (Fig. 18). Hargreaves designed this braided earthwork to fill the vacant blocks of the dislocated community and return some of the area back to its floodplain function—that of retaining waters during heavy rains, reducing downstream flooding, and purifying the percolating water. The form these braids adopt when extended into the cleared neighborhood grid is another example of Hargreaves's composite vocabulary. Grid and braid overlap to create a complex, undulating tapestry of future garden plots, bosques, and rivulets. The river encroaches the city, creating a surface of negotiation between wet and dry, cultivation and constant movement.

To the south, V-shaped high walls become elevated overlooks during periods of flooding (Fig. 19). Here, the city encroaches on the river, creating places of awe and wonder where the river's force and volume are most evident. At the confluence of Los Gatos Creek and Guadalupe River, the narrow channels open up to form a space, similar in shape to the sculpted, elongated braids. This bowl is framed by large triangular earthforms of the Euclidean, rather than fluvial, type. These provocative and eclectic earthworks create a territory along the river's banks that bonds the river and the city, sharing properties of each. As such, it serves as a zone of exchange between them—sometimes wet and sometimes dry, sometimes full of water moving down its channel and sometimes full of people strolling along its banks, sometimes a place for water to collect, linger, and then slowly percolate down into the ground, other times, a place for the citizens of San Jose to gather for civic events, linger, and slowly disperse.

It is a paradox of this project that the desire to create an emphatic, sculptural landscape form creates a place with equivocating spaces that accommodate no single use, but rather the flux and flow of riparian and urban cycles. Control is not the operative word here, since the river is permitted to transgress its proper boundaries at times. Another curious characteristic of this sculptural earthwork is its "open-endedness."[61] Hargreaves's firm is working toward a design practice that might be understood as initiating process instead of imposing form. In an interview with Jane Brown Gillette, Hargreaves described the differences between establishing a set of principles that lead to a design thesis and imposing a set of fixed forms.[62] Given the dynamics of water flow, soil erosion and deposition, and plant succession, the boundaries of mound and depression, meadow and thicket will vary over the course of years and decades. Some changes will be gradual, while others, caused by extreme floods or droughts, will be rapid. In registering the vicissitudes of natural and urban processes, the figured earthwork of *Guadalupe*'s riverbanks will allow San Jose's citizens to witness the interrelationships that bind them to their place and allow them, in Norberg-Schulz's terms, "to dwell."[63] *Guadalupe River Park* represents a group of works that are assembled with alternative form languages that signify the interdependency of human and nonhuman natural systems. Hargreaves's urban landscape relies on neither outdated images of nature, such as smooth riverbanks, clumps of trees, and meandering watercourses that belie the impact of development on the river's volume and quality, nor an image of technological control, such as a high concrete flood-control culvert that hides the river and its waters from the city, masking the impact of the water's release downstream. Instead, his project constructs new forms and spaces that promise to alter public conceptions of the boundaries between nature and the city.

Through their creative explorations of landforms shaped by natural processes, Morrish (at one time a designer with Halprin's office) and Hargreaves are building on a tradition that is some thirty years old. Halprin's fountains in Portland and Seattle were essays on the transformation of forms shaped by natural process into forms of urban place formation

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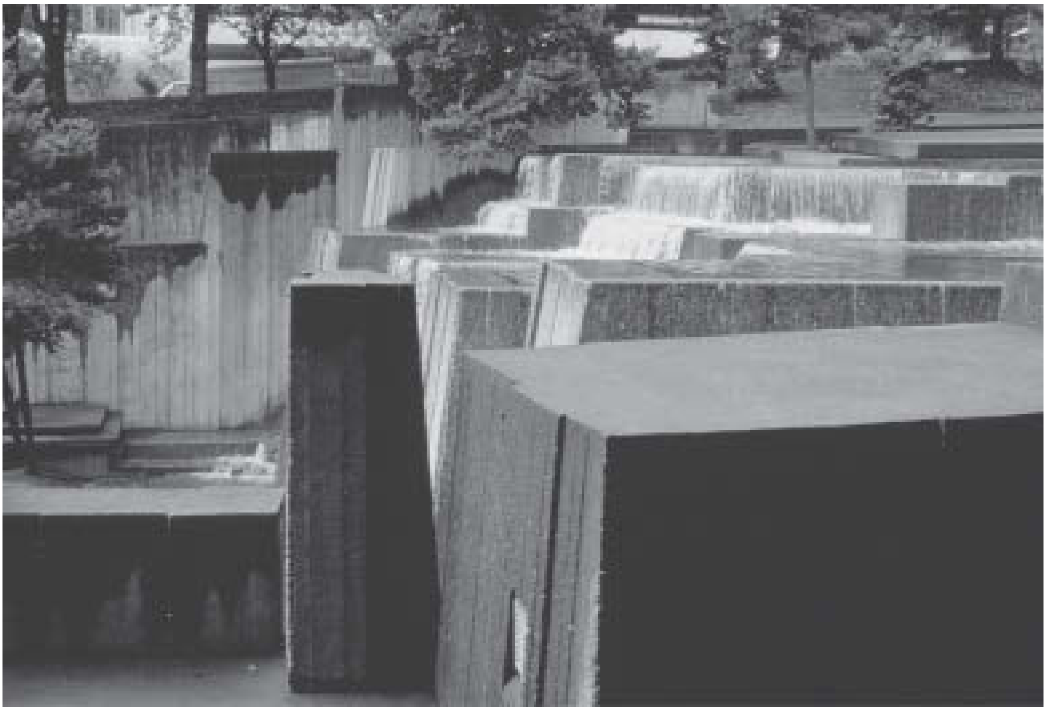
[61] This concept of Hargreaves's, which he calls "open composition," requires a designer to be the initiator of changing, contingent forms instead of the controller of fixed forms. The temporal landscapes that result from dynamic processes define a new genre located between the object landscapes of Peter Walker and the formlessness of earlier ecological design.

[62] Gillette, "River Runs through It," 74, 92.

[63] Norberg-Schulz, *Genius Loci,* 5. Norberg-Schulz defines dwelling as the goal of architecture. By visualizing the genius loci, the spirit of the place, architecture makes a place meaningful and allows humans to dwell there, in the Heideggerian sense of the term.



20. Auditorium Forecourt, *Portland, Oregon, by Lawrence Halprin, 1966–67*

(Fig. 20). By describing nature as a sculptor of form, Halprin persuasively argued how a designer can be interested in emphatic, legible form and the invisible processes of nature. In "The Shape of Erosion" (1962), he outlined the ways that sculptural forms and landforms are analogous.[64] This short but insightful article identified two aspects of landform that landscape architects should study—the surface form and the processes that shaped it. By studying not only the former, as he did in his extraordinary sketchbooks, but also the latter, the landscape architect could "begin" to tap the true source of form."[65] For Halprin and the generations of designers who have read his writings and experienced his urban projects—especially those in the region he knows so well, the West Coast—this insight into the processes and phenomena that shape form has been key to their ability to make places for human life. As he wrote, "We derive our sense of sculpture, our understanding of form, our relationship to group composition, our basic choreography through our relationship to natural phenomena."[66]

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[64] Lawrence Halprin, "The Shape of Erosion," *Landscape Architecture* 52, no. 2 (January 1962): 87–88.

[65] Ibid., 88.

[66] Ibid. See Howett, "Systems, Signs, Sensibilities," 11, for an elaboration of this characteristic in Halprin's work and its parallels to Heideggerian notions of dwelling that entail not only living but also caring, making, building, and cultivating.

Halprin's example and Hargreaves's and Morrish's elaborations on his design thesis demonstrate the environmental role of a design practice that employs nature's forms and processes to reinvigorate human settlement patterns and gathering places.[67] What differentiates their work from other contemporary works that objectify natural geomorphology for symbolic resonance and sculptural presence, such as Martha Schwartz's *Federal Courthouse Plaza,* Minneapolis (1998), is their concern for revealing the reciprocity between form and process and between human routines and natural cycles. Moreover, one of the key contributions of Halprin, Morrish, and Hargreaves to the phenomenology of place is their recognition that structure and phenomena as well as perception and conception are vital to the activity of making landscapes. These designers have employed varied means by which to translate this concern for natural processes into a physical, sculptural vocabulary of design forms. These vocabularies do not privilege the forms of culturally constructed geometries over the forms of naturally evolving geomorphologies. Formal and informal concepts have little meaning in how these designers give form to their environmental values. Their forms refuse to fade into the background as "natural." They are not the counterpoint to some ordered urban architecture. They are their own forms—forms of the land and, in the case of Hargreaves's *Guadalupe Park,* forms that welcome the reshaping and sculpting that the next heavy winter rain or crowded summer festival will inevitably bring. Form and space in this genre of work are neither absolute nor constant, but armatures that transform and deform over time. This type of practice carries out Smithson's goals for reimagining the park, which he outlined in his 1972 article in *Art Forum:*

> Parks are finished landscapes for finished art. A park carries the values of the final, the absolute, and the sacred. Dialectics have nothing to do with such things. I am talking about a dialectic of nature that interacts with the physical contradictions inherent in natural forces as they are—nature as both sunny and stormy. Parks are idealizations of nature, but nature in fact is not a condition of the ideal. . . . Nature is never finished. . . . Parks and gardens are pictorial in their origin—landscapes created with natural materials rather than paint. The scenic ideals that surround even our national parks are carriers of a nostalgia for heavenly bliss and eternal calmness.[68]

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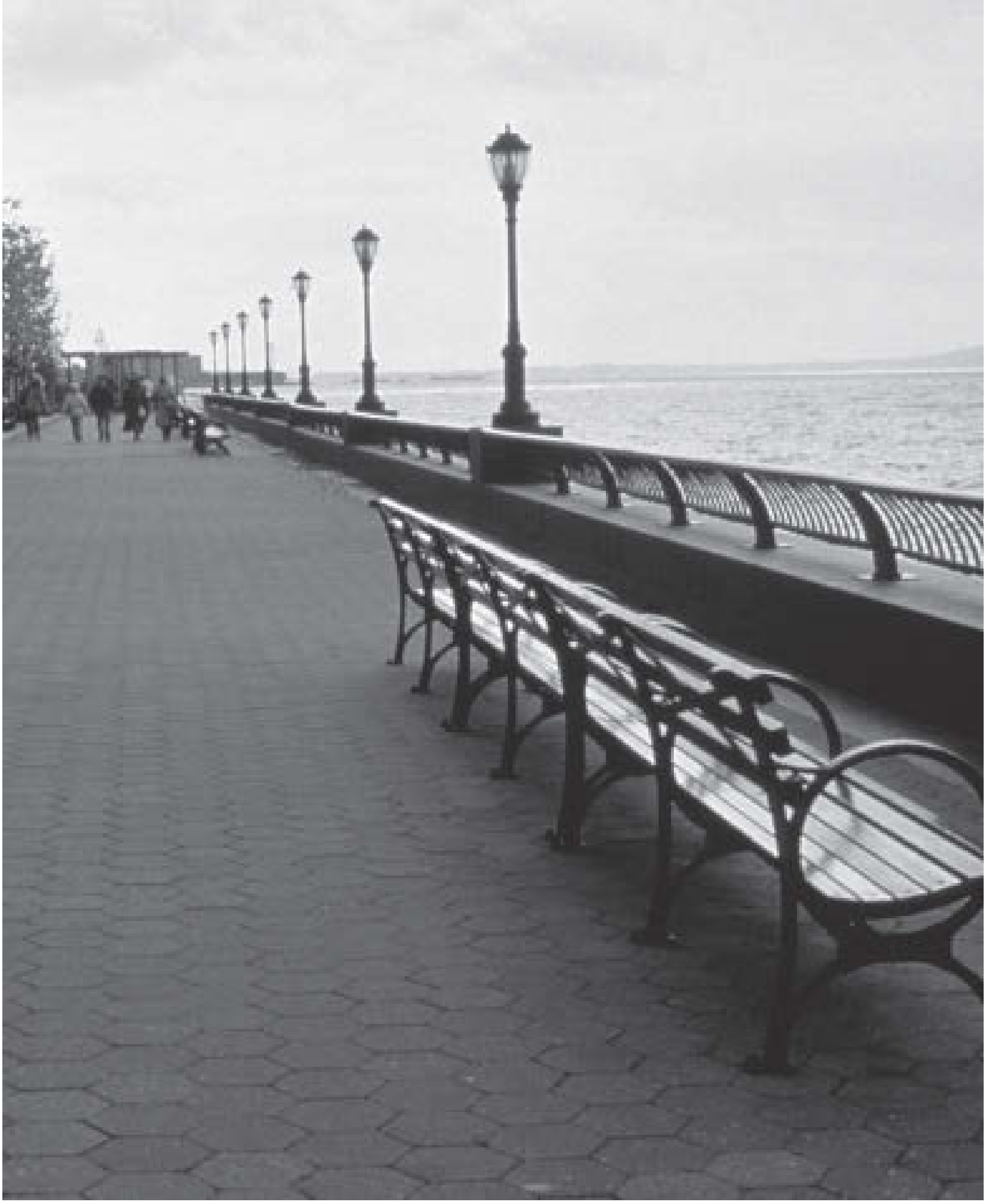
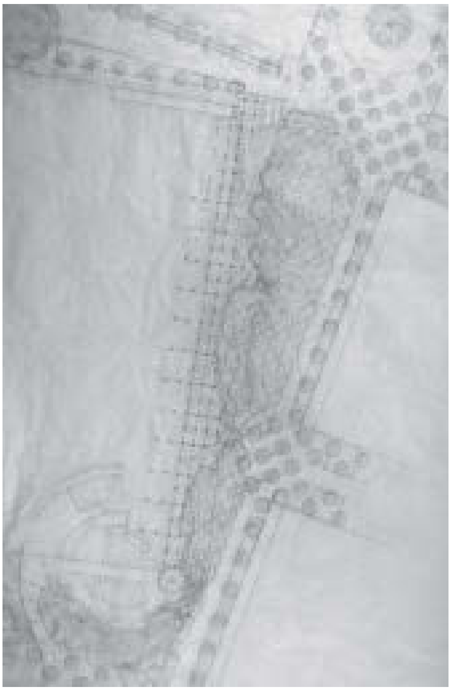
[67] See Spirn, "The Poetics of City and Nature," 108–26. This article is in a special *Landscape Journal* issue edited by Spirn and thematically entitled "Nature, Form, and Meaning." Spirn's article is an important bridge between McHarg's ecological planning theories and the work that I chronicle in this article, as she identifies many of the issues explored by Hargreaves and Van Valkenburgh. She also discusses Halprin's seminal role in the exploration of constructing experiences in the city that engender human interaction within a formal vocabulary that abstracts forms shaped by natural processes.

[68] Robert Smithson, "Cultural Confinement," *Art Forum* (October 1972), reprinted in Holt, *Writings of Robert Smithson,* 133.

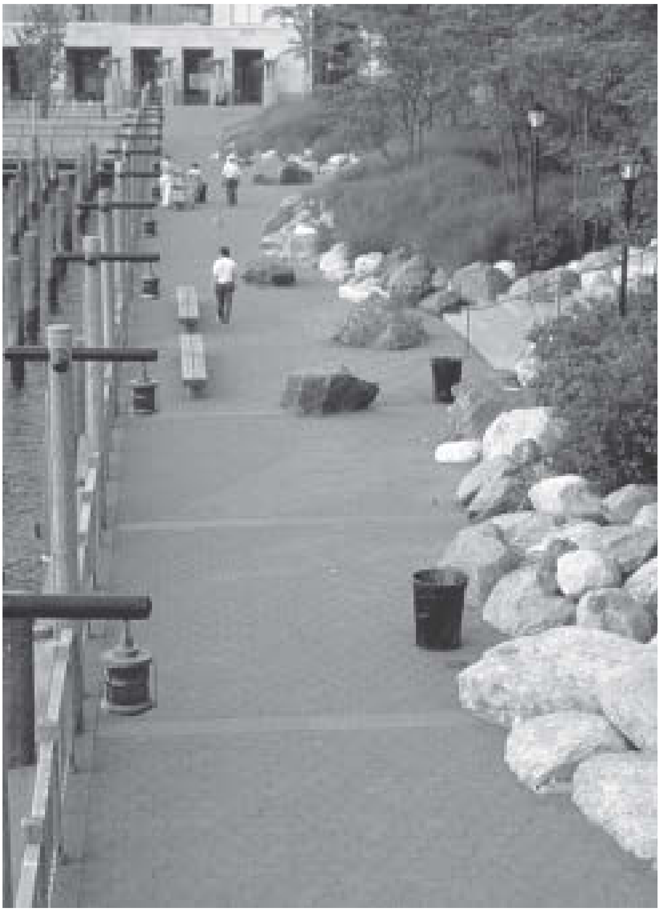


21. Esplanade, view south toward South Cove, Battery Park City, *New York City, by Hanna/ Olin and Cooper Eckstut, 1979*



22. Site plan, South Cove, *by Susan Child, Mary Miss, Stan Eckstut, 1985,* Battery Park City, *New York City (plan: courtesy Susan Child Associates)*

23. Esplanade, South Cove, *by Susan Child, Mary Miss, Stan Eckstut, 1985,* Battery Park City, *New York City. Here, the character of the esplanade changes. The simple wall and rail give way to rows of bundled wooden piers and a wooden railing. A ramp leads down to the water. A bank of* Rosa rugosa, *multistemmed honey locust trees, and boulders rise above the paved esplanade, as if the original shoreline of Manhattan were erupting through the veneer of this simulated history.*



Giving Form to the Neutral Field: Land as Deep Structure—Accretive, Layered Strata

Much as Hargreaves made the city's natural history manifest by creating a river park around a temporal and spatial armature, various urban projects and theories have tapped the city's cultural history as a source of a landscape's physical, spatial, and temporal armature. During the early 1970s, the excesses of urban renewal became apparent to many design and planning professionals. Simultaneously, the preparations for the United States Bicentennial refocused Americans' attention toward physical reminders of their own history. Since then, urban designers have advocated contextual design strategies that value, preserve, adapt, and interpret the physical context in both infill and new districts. Cooper Eckstut's and Hanna/Olin's master plan for *Battery Park City,* New York City (1979), was such a project. This linear precinct, created from excavated landfill from the World Trade Towers construction, was laid out in an urban grid with a continuous street network and street walls evocative of the fabric of the adjacent city. Similarly, Hanna/Olin's river Esplanade, the first public landscape built within the development, is reminiscent of several revered public spaces in Manhattan (Fig. 21). In short, *Battery Park City*'s designers sought to read the precinct as continuously as possible within its urban context, construed as a visual context focused on the city's surviving cultural and physical history, which could be emulated and reinterpreted.[69]

For some, this visual contextualism belies the city's actual history, which is much less coherent and more fragmented than the orderly pattern of *Battery Park City*'s blocks, streets, parks, and esplanades. Along the water's edge, the history of the city is both ecological and cultural—a story of filling, regularizing, and hardening the waterfront to control the impact of the fluctuating tides, maximize human use, and increase economic gain. *Battery Park City*'s southern esplanade, South Cove (1985), designed by a collaborative team made up of the landscape architect Susan Child, the artist Mary Miss, and the architect Stan Eckstut, is startlingly different in structure and character from the Hanna/Olin esplanade (Fig. 22). This difference reflects a different set of environmental values surrounding what it means to define the past as well as to frame the scope and content of context.

Walking south on the Hanna/Olin esplanade, defined by hexagonal block pavers familiar to all who stroll through many of New York's older parks, one is elevated above the Hudson and bounded by an elegant metal rail that curves inland, as if coaxing the walker to stop and lean on it. The esplanade closest to the water is a place for strolling, jogging, and skating. Parallel to it runs another path, slightly raised and lined with benches. Ahead, the continuous line of the upper and lower esplanade is broken as the paths turn inward toward the city, shaping the river's edge into a small recess that is called *South Cove* (Fig. 23). At the cove's far end, the esplanade passes a metal overlook and turns back toward the river in the

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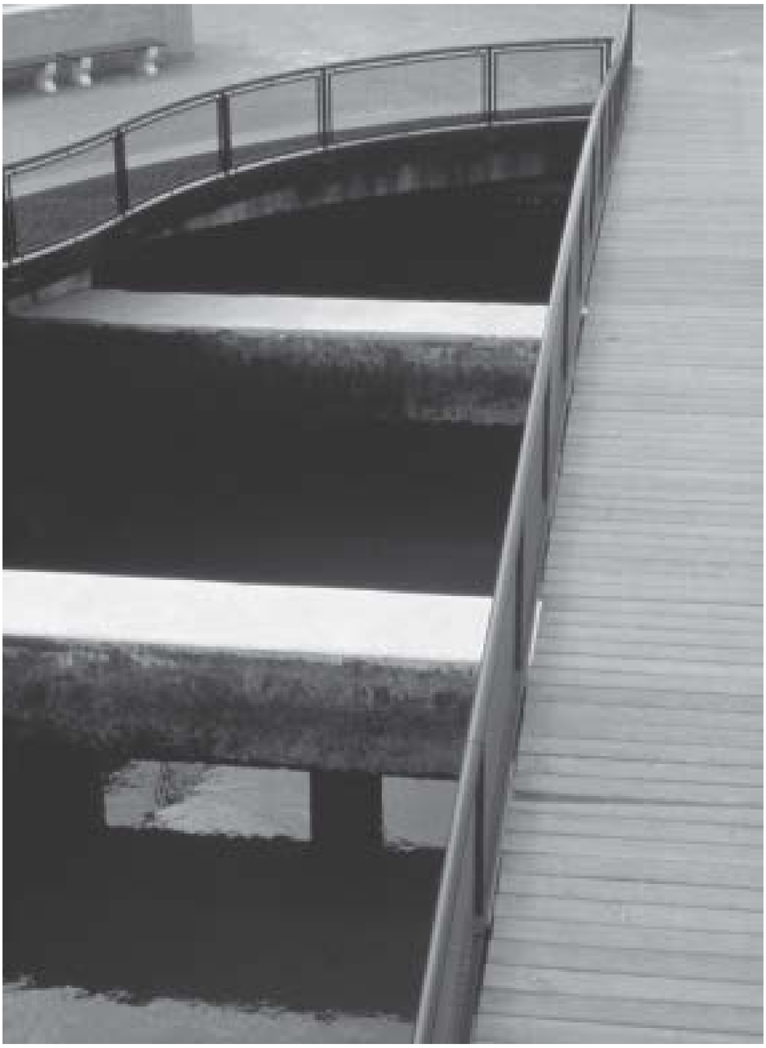
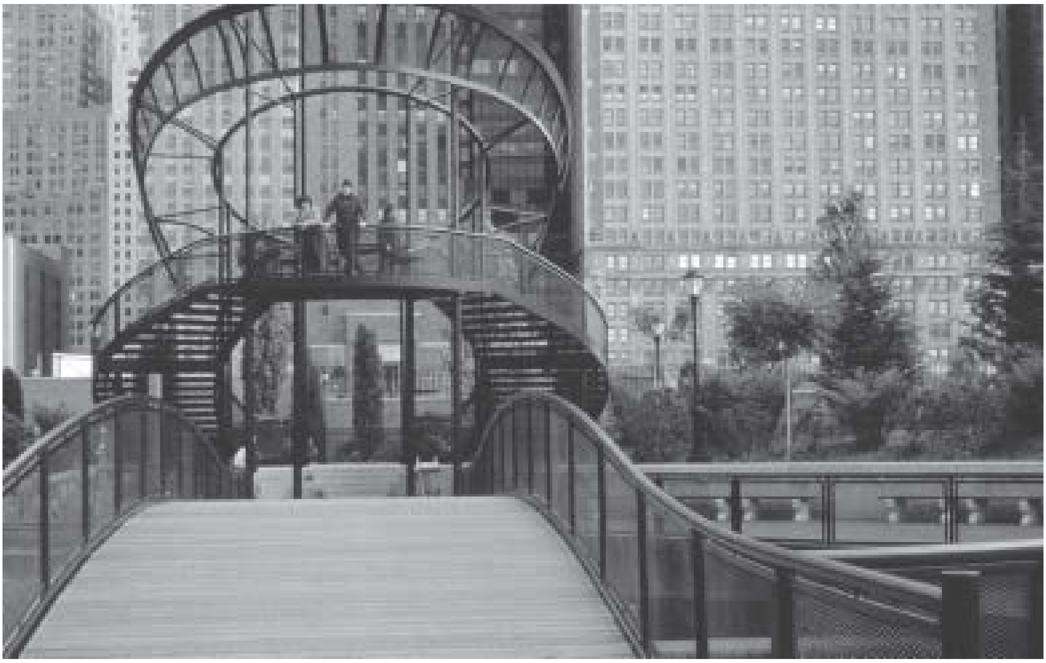
[69] For background on *Battery Park City,* see Catherine Howett, "Battery Park City," *Landscape Architecture* 79, no. 5 (May 1989): 51–57; Robin Karson, "Battery Park City Takes Manhattan," *Landscape Architecture* 75, no. 4 (July/Aug 1985): 64–69.



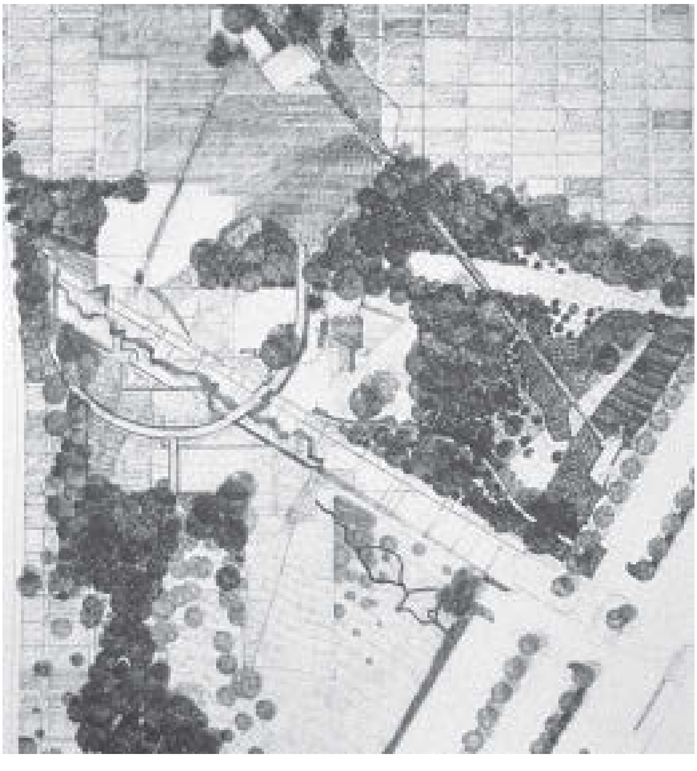
24. Spiral deck, South Cove, *by Susan Child, Mary Miss, Stan Eckstut, 1985,* Battery Park City, *New York City*

shape of a spiral, becoming ever narrower and less substantial. Viewed from the spiral, the ground seems to dematerialize from a solid, stable mass into a thin membrane stretched over the skeletal concrete frame of the park (Fig. 24). At *South Cove,* the edge between the land and the water is layered in section, thick in horizontal dimension, and composed of diverse materials. Its complexity reflects the contingency of the site—a place where the water was filled in and decked over to expand the city. By unpeeling its layers, Child, Miss, and Eckstut reveal the environmental history of this constructed site along with much of Manhattan's waterfront, where the past is not frozen in time, but often obscured by layers of accretion and change.

The metaphor of *South Cove* as a thin skin over a structural skeleton is recapitulated in the shape and outline of the metal overlook (Fig. 25), which echoes the form of the Statue



25. Overlook, South Cove, *by Susan Child, Mary Miss, Stan Eckstut, 1985,* Battery Park City, *New York City*



26. Conceptual site plan, University Art Museum Project, *California State University, Long Beach, California, by Peter Eisenman and Laurie Olin, 1986 (plan: courtesy of Laurie Olin)* of Liberty in the distance, another structure whose surface belies its skeletal frame. While these sculptural allusions enrich the experience of the visitor who is knowledgeable about the history of sculpture and technology, this knowledge is not necessary for the aesthetic experience. Given *South Cove*'s adjacency to and continuation of the esplanade and its startling juxtaposition of materials, surfaces, and iconography, one cannot help but wonder and muse about the place. In contrast to Olin, Child and her collaborators constructed an experience that provides a different relationship not only to the river and the shore, but also to history and time itself. Here, environmentalism is introduced into the historical arena: it is not simply a present value, but a set of historically situated and enacted values that construct the city and preserve the environment.

This type of project is evident in other landscape works as well, such as the collaborations between Peter Eisenman and Laurie Olin at the University Art Museum, California State University, Long Beach (Fig. 26), or the recent student work by Alexis Woods for an addition to the island cemetery of San Michele off Venice (Fig. 27). Such projects introduce environmental history and the notion of a synchronic reading of history into the theory and practice of urban landscape design.[70] In doing so, they act as a form of built critique, challenging the environmentalism of much of postmodern contextualism's aesthetic codes, which are predicated on a single, ideal history that is to be replicated and simulated in new construction. In place of the idea of *Battery Park City* as a cleared site—an unbuilt, flat plane awaiting future development to give it structure and character—*South Cove*'s design forms resurrect the coastal processes and histories that predated the cleared site, the landfill, and the industrial waterfront. The project avoids the nostalgia that such a strategy could readily evoke by employing a design language of fragmentation, juxtaposition, and collage instead of imitation and replication. By placing the cove shoreline above and behind the esplanade, thus displacing the shore, this landscape evokes wonder and surprise, not familiarity. It engages those who encounter it by land or water to question the effortlessness and naturalness of this new/old precinct of the city. As with all these postmodern, postenvironmental landscapes, the designer's act of perceiving the place is registered and manifest in the work's conceptual vocabulary, built forms, and spaces, which create an environment for others to perceive and marvel as they engage the edge between land and water, present and past.

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[70] For an account of Eisenman's work, see Jean-François Bédard, *Cities of Artificial Excavation* (Montreal: Canadian Centre for Architecture and Rizzoli, 1994). This generally excellent review is seriously deficient, however, in its failure to mention Laurie Olin's collaborations with Eisenman and how the start of these collaborations coincided with Eisenman's interest in site issues. For an account of Olin's contributions, see Laurie Olin, "Landscape Design and Nature," in George Thompson and Frederick Steiner, ed., *Ecological Design and Planning* (New York: John Wiley and Sons, 1997), 109–39. In addition to the University Art Museum, Eisenman and Olin collaborated on the Wexner Center, Ohio State University, Columbus (1982–87) and the Carnegie Mellon Research Institute, Pittsburgh (1987).

Finding Form in the Formless and Unbounded: The Shape of Change, Dynamics, and Disturbance

The place of engagement between land and water at *Battery Park City* is the place where the mythic, historical context that undergirded its master planning principles was revealed to be a surficial veneer masking the site's actual history of environmental change. Only by moving along the esplanade across sectors designed and built by others does the experience of *South Cove* become environmentally meaningful and aesthetically powerful. Similarly, a number of projects designed on damaged or polluted sites gain their power through contrast and juxtaposition with their surroundings. Such projects demonstrate how a landscape architect can acknowledge the history of not only human use, but also abuse of the land. Robert Smithson believed that projects of this genre were among the most challenging. "My own experience," he wrote, "is that the best sites for 'earth art' are sites that have been disrupted by industry, reckless urbanization, or nature's own devastation."[71] In creating their reclamation landscapes, Richard Haag at *Bloedel Reserve* (1979), a harvested second-growth forest, George Hargreaves at *Byxbee Park* (1988–92), an East Palo Alto sanitary landfill (Fig. 28), and Julie Bargmann at the *Vintondale, Pennsylvania, Acid Mining Drainage Project* (1996–) (Fig. 29) worked outside the aesthetic paradigm that still dominates land reclamation efforts some twenty-five years after Smithson's death. Instead of returning the site to some image of an idealized nature thought to exist before human dumping, harvesting, destroying, and polluting, Haag, Hargreaves, and Bargmann worked with the site contingencies, highlighting and reinforcing them. In doing so, they called into question the assumption that industrial destruction must be hidden beneath a veneer of pastoralism.

The four gardens that constitute Haag's work at the *Bloedel Reserve* on Bainbridge Island have been well documented, but the forest they were carved out of has not (Fig. 30).[72] By looking closely at how one experiences the boundaries between the forest and the sequence of the four gardens—the *Garden of Planes,* the *Moss Garden* (or *Anteroom*), the *Reflection Garden,* and the *Bird Marsh*—the garden rooms can be interpreted as lenses for viewing the forest rather than as the project's primary subject. When this reversal of figure and frame occurs, the role of the four gardens in the development of new landscape design grammars becomes obvious. Additionally, one understands Haag as operating similarly to Halprin as a perceiver of site, not as an analyzer of systems.

The *Bloedel Reserve* forest is entered from a meadow. At this threshold is a large sculpted mound, which marks the edge of construction disturbance along the boundary

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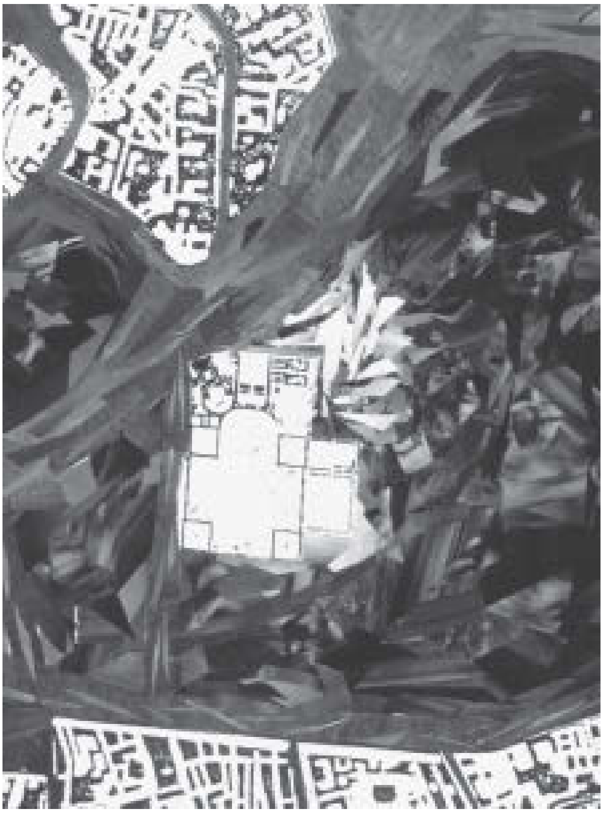
[71] Smithson, "Frederick Law Olmstead and the Dialectical Landscape," 124.

[72] Susan Rademacher Frey, "A Series of Gardens," *Landscape Architecture* 76, no. 5 (September/October 1986): 54–61, 128; Felice Frankel and Jory Johnson, *Modern Landscape Architecture: Redefining the Garden* (New York: Abbeville Press, 1991), 52–69. *Richard Haag, Bloedel Reserve and Gas Works Park,* ed. William Saunders (New York: Princeton Architectural Press, 1998), contains essays by Patrick Condon, Gary Hilderbrand, and Elizabeth Meyer.



27. Site interpretation collage, Addition to San Michele Cemetery, *Venice, Italy, by Alexis Woods, 1997. This speculative project acknowledges the dynamic nature of land formation in the Venetian lagoon by proposing a cemetery that is shaped over time by cultural practices, such as burial internment and consolidation of remains into smaller bone boxes and communal graves, as well as the natural processes of erosion and deposition by water and wind. (collage: courtesy of Alexis Woods)*

28. Ridgeline of mounds, Byxbee Park, *East Palo Alto, California, by George Hargreaves, 1988–92* of the forest and meadow (Fig. 31). The *Garden of Planes* was the most controlled and abstract of the series.[73] Bounded by a Japanese teahouse and the earthen mound, it centered on an sculpture of angular positive and negative planes of stone. It was a place frozen in time, unchanging and obdurate. A short walk separates the *Garden of Planes* from the *Moss Garden.* Unlike most gardens, its form is not enclosed by walls, thus its vertical boundaries are vague. This garden was cleared of much of its forest understory so that the large stumps of harvested trees and the fallen trunks are more visible (Fig. 32). Then Haag introduced a carpet of nonnative chartreuse moss. This garden, unlike the *Garden of Planes,* is a place where time does not stop. Decay will slowly destroy this otherworldly place—half memorial to the site's former lumbering operations, half ode to Japanese moss gardens. Smithson's entropy is operative here, as fallen logs return to the soil, yet regeneration is slowly transforming this place, as giant stumps act as hosts to small seedlings. If the first garden is characterized by ideas of unchanging form and abstract space, the *Moss Garden* is a place that, in Mara Miller's words, "articulates space in the interest of articulating time."[74]

The dramatic contrast between the first and second gardens do not prepare one for the third garden, which adjoins the *Moss Garden.* In the *Reflection Garden,* the forest is reduced to its essentials—ground, water, sky, and perimeter trees (Fig. 33). Its beauty rests in the separation and clarity of each element. Haag employed Euclidean geometry to mark the center of the garden, a cut in the surface filled with rising groundwater, as well as the garden's edge, bounded by a yew hedge and vertical trunks of the surrounding forest. A long walk through the reserve leads to the *Bird Marsh,* a light-filled, watery realm that is a habitat for birds. Here, humans are clearly visitors. Though this garden also has a clear center and edge, neither are marked by obvious geometry. Rather, the extent of an alder grove that grew in the aftermath of a forest fire marks the garden's boundaries (Fig. 34). This disturbed site in an already disturbed setting—a fire-damaged grove in a harvested forest—creates a recognizable place within the larger forest matrix. To create the pond at the center of this grove, Haag expanded an existing irrigation pond. The small islands within this remnant of an early agricultural operation are now home to this "unnatural" retreat for birds.

At *Bloedel,* the disturbance of lumbering and fire were not cleaned up or beautified. Instead, the very location of gardens, as well as the shape and size of their boundaries and centers, were site conditioned. While Haag does not acknowledge the work of site-artists as his inspiration, as his younger colleagues do, his way of working on-site—through immersion and observation over long periods of time—imbued this landscape with an astounding specificity to the contingencies of the site. The forest, at first a dark, wet monolithic enclosure, is slowly revealed to those who visit the reserve. As the designer as perceiver, Haag discovered the disturbed forest's mysteries over time. Now, such

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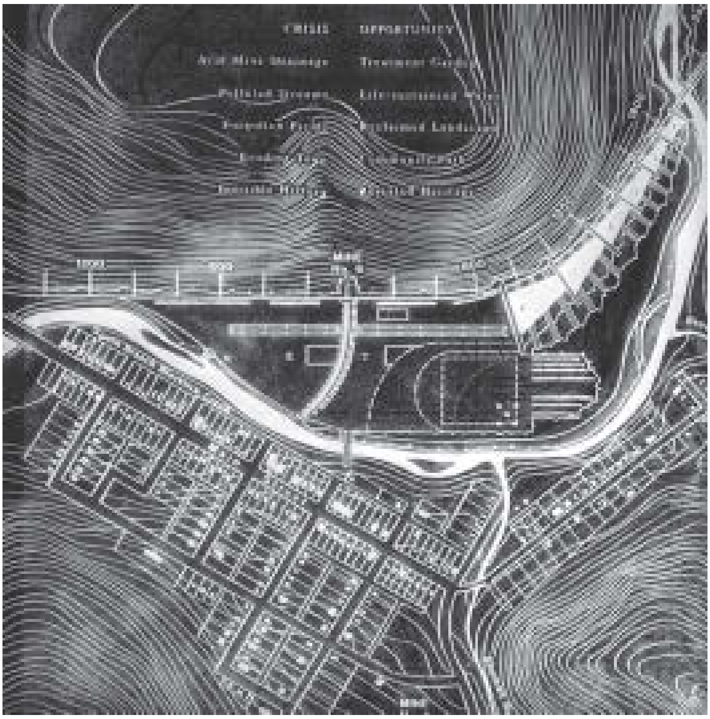
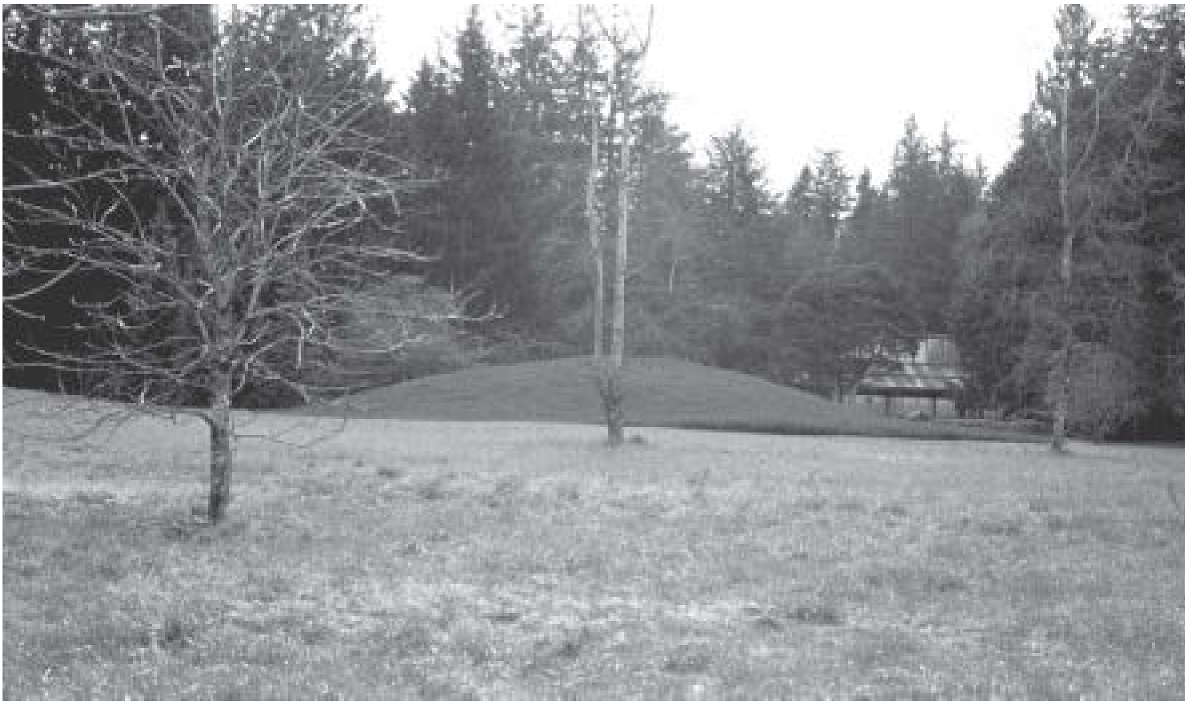
[73] This room has been considerably altered since Haag's involvement. This essay refers to his original design, not the later alteration.

[74] Miller, *The Garden as an Art,* 39.

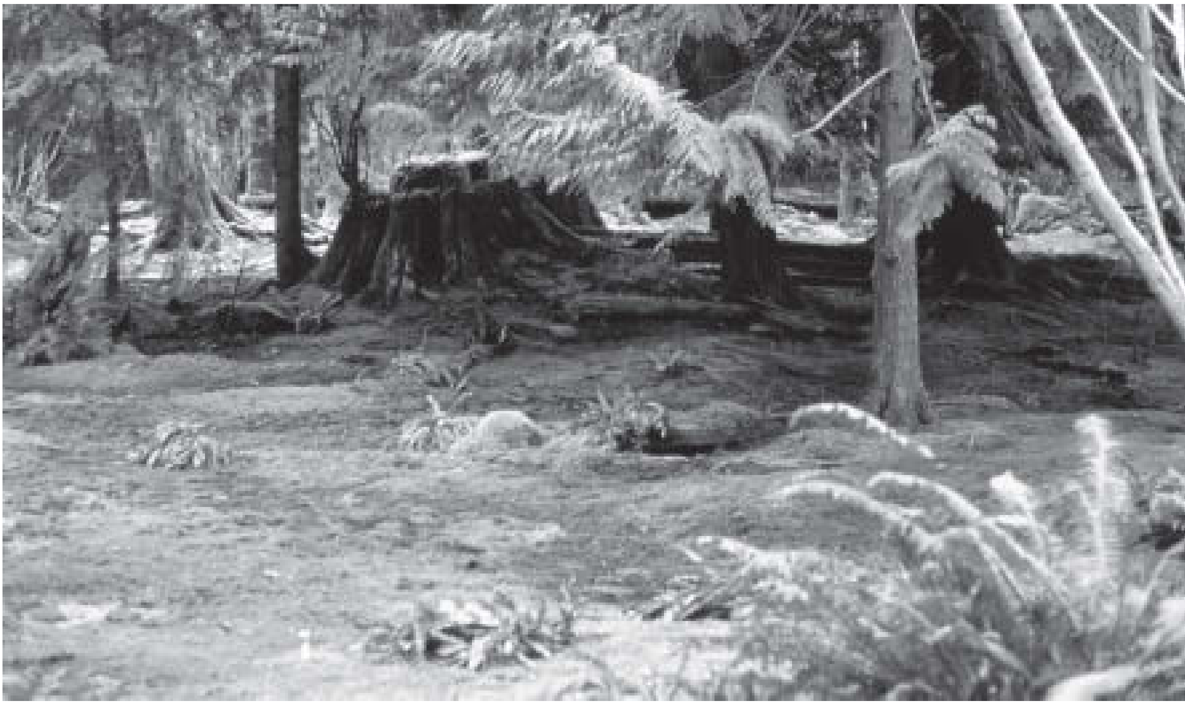


29. Conceptual plan, AMD + ART, Testing the Waters, *Vintondale, Pennsylvania,* Acid Mining Drainage Project, *by Julie Bargmann, Stacy Levy, Alan Comp, and Robert Deason, 1996– (plan: courtesy of Julie Bargmann)*

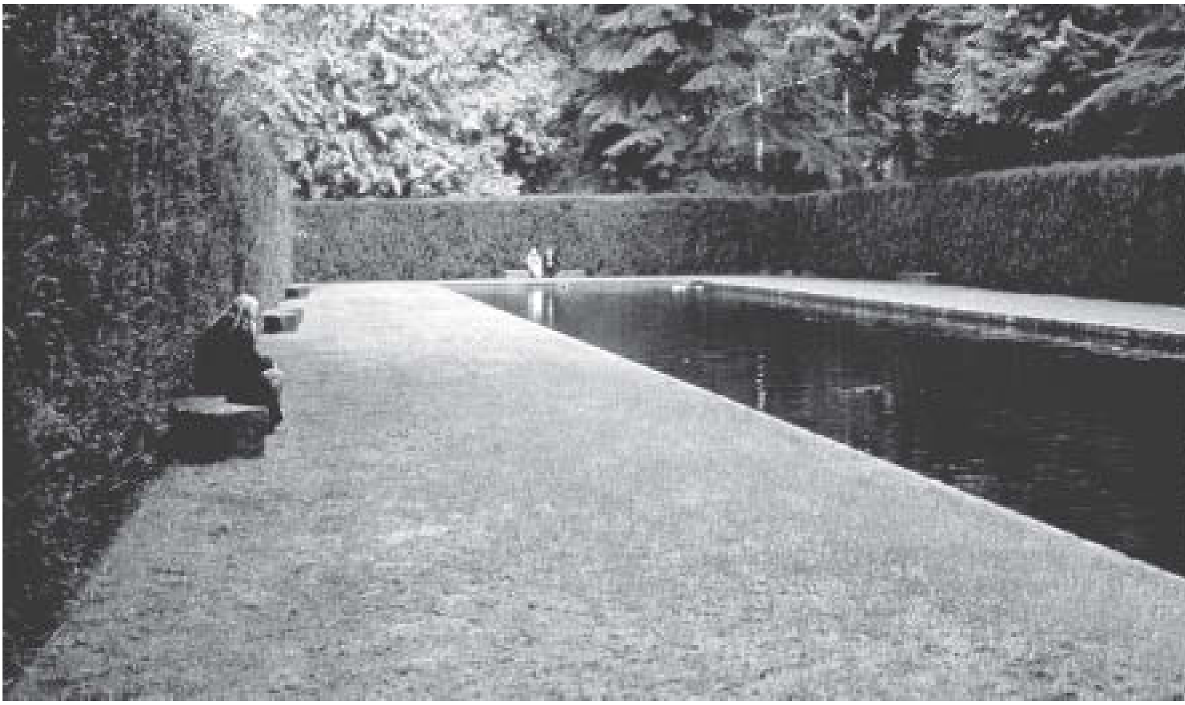
30. Forest understory at Bloedel Reserve, *Bainbridge Island, Washington*



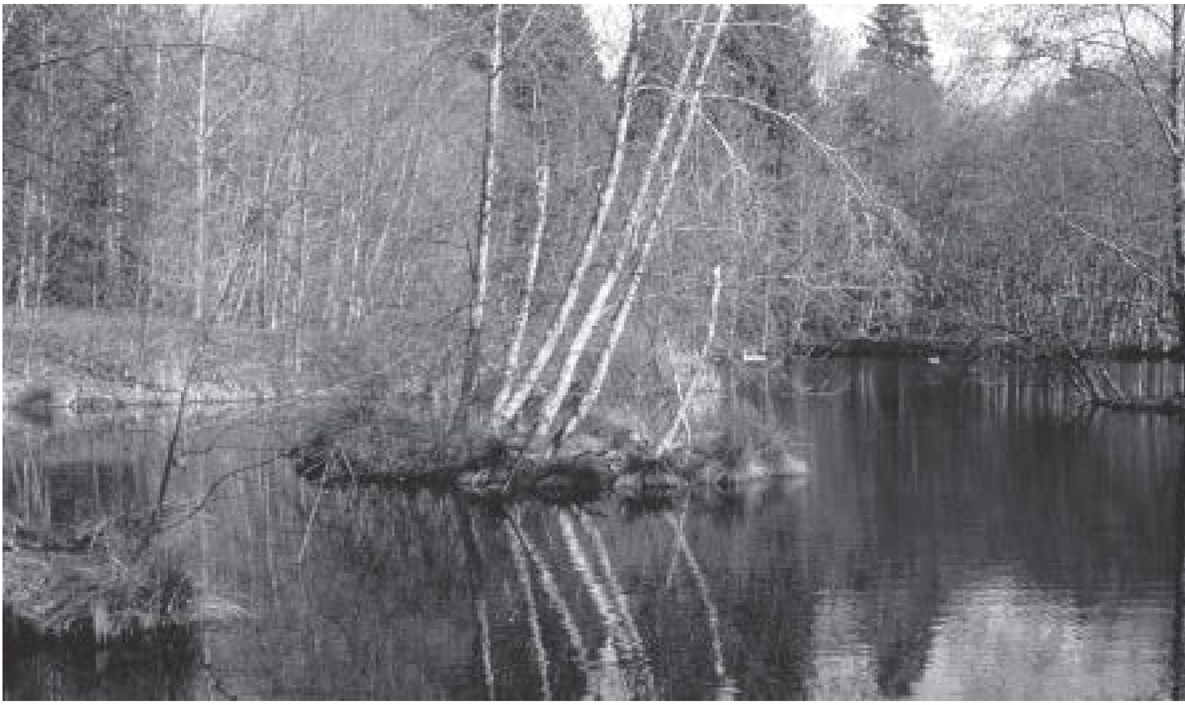
31. Panorama, entrance to the garden sequence from the meadow, Bloedel Reserve, *Bainbridge Island, Washington, by Richard Haag, 1979–84*



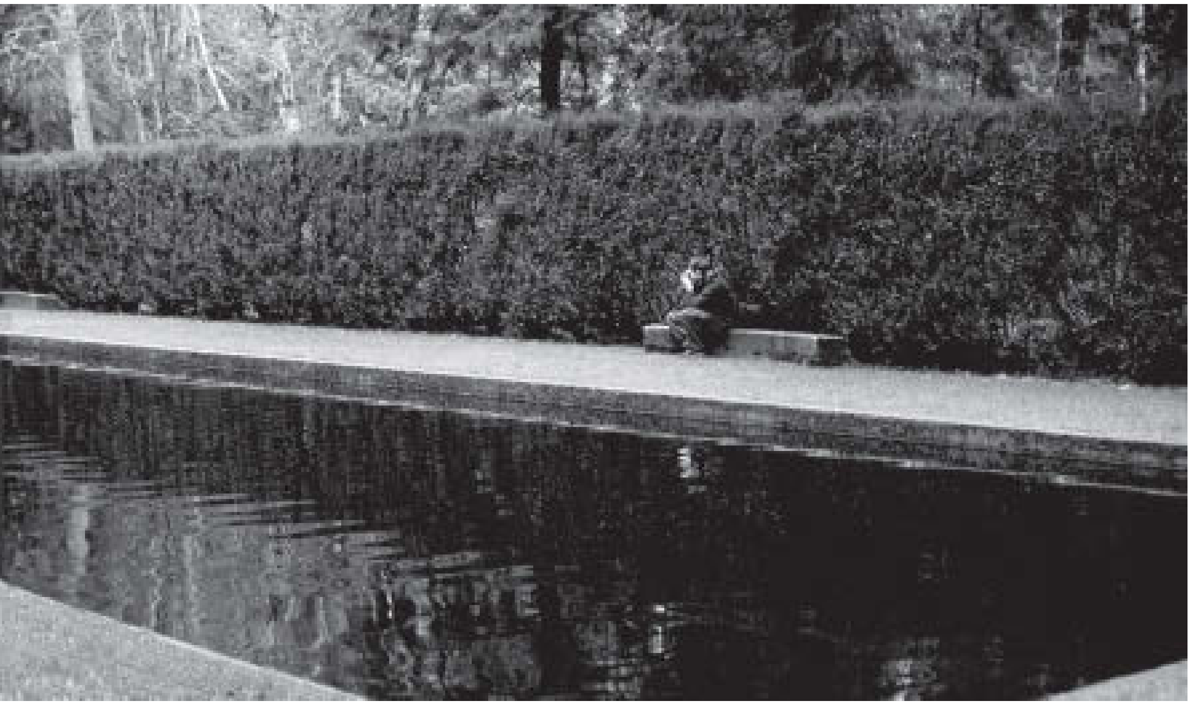
32. Panorama, Moss Garden, Bloedel Reserve, *Bainbridge Island, Washington, by Richard Haag, 1979–84*



33. Reflection Garden, Bloedel Reserve, *Bainbridge Island, Washington, by Richard Haag, 1979–84. A narrow, clipped yew hedge, rectangular in shape, defines the boundary between forest and clearing.*



34. Alder grove, Bird Marsh, Bloedel Reserve, *Bainbridge Island, by Richard Haag, 1979–84*



mysteries are decoded for visitors through the forms and spaces of the reserve's four gardens. Perhaps this project could be criticized for making a disturbed site so hauntingly beautiful, but its significance was not achieved at the expense of glossing over its environmental history of disturbance.

If Robert Cook's exegesis of contemporary ecological theory, as presented in this volume, is germane to the development of landscape architecture theory, projects such as *Bloedel Reserve,* Hargreaves's *Byxbee Park,* and Bargmann's *Vintondale, Pennsylvania, Acid Mining Drainage Project* may be important steps toward developing designed landscapes based on a paradigm of ecological disturbance instead of balance. If so, the discipline of landscape architecture may well have to rely on new mythologies, as well as paradigms, that substitute the disciplinary mythology of healing and balance with one of trauma and disturbance. Through this lens, the formal dichotomies between nature and culture are inadequate constructs for constructing landscape experiences. Likewise, formal criticism that does not expand its frame of reference to document and interpret context—the proximity, for example, of a "sanitary" landfill to an adjacent estuary—cannot adequately decode a project's forms, experiences, impacts, or meanings. As designers in the late twentieth century struggle to give form to the environmental values of their time, the tools of critics and scholars are also called into question.

Finding Form in the Formless: Characterizing the Experience of Ecosystems

If Haag's designed landscapes within the *Bloedel Reserve* are analogous to lenses through which the forest can be perceived more clearly, the *Village of Yorkville Park* (Fig. 35), a new urban park in Toronto, might be seen as a "Victorian collection box" for recalling the experience of distant ecosystems in the city.[75] In many ways, this project is a hybrid between the formal explorations of Walker and the site-specific and process-oriented explorations of Smithson and Irwin. This is not surprising given that Martha Schwartz, David Meyer, and Ken Smith, the designers of this small, one-acre park, studied or practiced with Walker at one time. With *Village of Yorkville Park,* the search for giving form to environmental values shifted entirely from a concern for process and the shape and forms created by process to an interest in the experiences and phenomena of an ecosystem—its textures, sounds, temperatures, and smells.

Within the repetitive, spatial framework of rowhouses on a city block, the three designers "collected" seventeen ecosystems, one per box, or bay (Fig. 36). This urban park as an ecological curio case reframes the ecology/art divide by making ecology the subject of a landscape as artwork. In doing so, it offers an alternative to the ideas that ecological concerns must result in formlessness or that the relationship between ecology and design is always one of opposition and difference.[76] Like J. C. Loudon in the nineteenth century and

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[75] "1996 ASLA Awards: Northern Exposure," *Landscape Architecture* 86, no. 11 (November 1996): 70–76; fall 1996 lecture by, and author's conversations with, Ken Smith when he was a visiting studio critic at the University of Virginia.

[76] Even Louise Mozingo, in "The Aesthetics of Ecological Design," 47, perpetuates this distinction when she focuses on the landscape at the "interface of the built environment and ecological systems."

Roberto Burle-Marx in the twentieth century, Schwartz, Smith and Meyer are advocates for the recognition of landscape as art. By bringing native plants into the city and assembling them in clearly artificial groupings, a practice reminiscent of Burle-Marx, Schwartz, Smith, and Meyer were, in essence, urbanizing nature and naturalizing the city.

Schwartz, Smith, and Smith would likely bristle at the moniker "ecological designers," and no one would confuse their work for that of the Philadelphia-based and McHargian-trained Andropogon Associates. Yet their *Village of Yorkville Park* makes a significant contribution to ecological design by creating a rich, phenomenal experience of nature that does not require one to leave a sidewalk to appreciate its aesthetic qualities. Given the lack of walls in the park, one can pass through seventeen ecosystems within a distance of less than five hundred feet—from upland conifers to lowland marsh. While such an experience is not mistaken for encounters with ecosystems in the actual Canadian wild, much as a zoo exhibit or natural history museum installation is not mistaken for the jungle or rainforest, it may, like an experience at the zoo or museum, create an aesthetic appreciation for its subject that could lead to empathy. If one of the goals of landscape architecture is to construct spaces where humans can experience natural processes in flux, thereby engendering a greater sense of interdependence between humans and nature, perhaps there is a role for a project like this. Here, environmental experiences are anticipated not only through the abstraction and objectification of ecosystems, but also through the choreography of human movement through the ecosystems' sensory and tactile spaces.

In 1995 Peter Walker and Pamela Palmer created a temporary garden installation entitled *Ground Covers.* Like *Village of Yorkville Park,* it catalogued a series of ecosystems within a garden parterre.[77] Unlike *Village of Yorkville Park,* this parterre was more conceptual than experiential and phenomenal, since its entire depth was only a few inches (the height of nursery flats). The nursery flats as parterre contained organic materials signifying the substances that cover the earth's surface. Scaled to their actual proportion on earth (for instance, 67 percent saltwater, 8.3 percent forest, 9 percent desert), the materials that created this modest project told a few stories. One, Walker's story, was how small an impact landscape architects have: only .02 percent of the earth's surface is covered with parks and gardens. Walker hoped this story would reduce the friction between environmentalists and landscape artists.

> What I was *hoping* to get at—my little political thing—was that gardeners and landscape architects are not really the problem here, because we had this one little tiny representation of *all* parks, *all* designed landscape in the whole world represented by a fly on the elephant. There's just nothing. Of course I think it's sad that we've been held up by our fellows as being somehow culpable, but actually we're a very small part of this whole problem. Urban and land pollution, which is something people should be worried about, is vast compared to what we designers since the beginning of time have been able to effect.[78]

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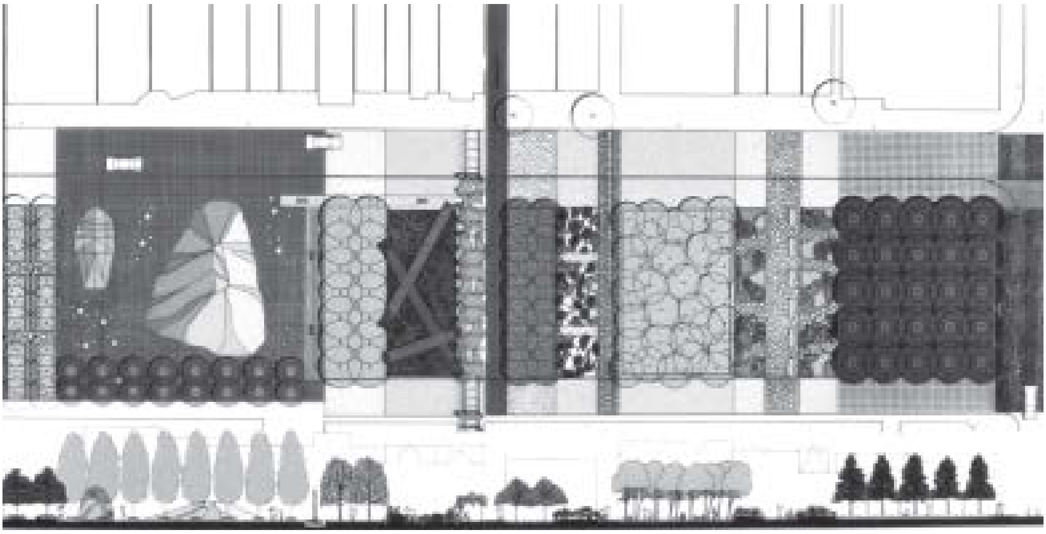
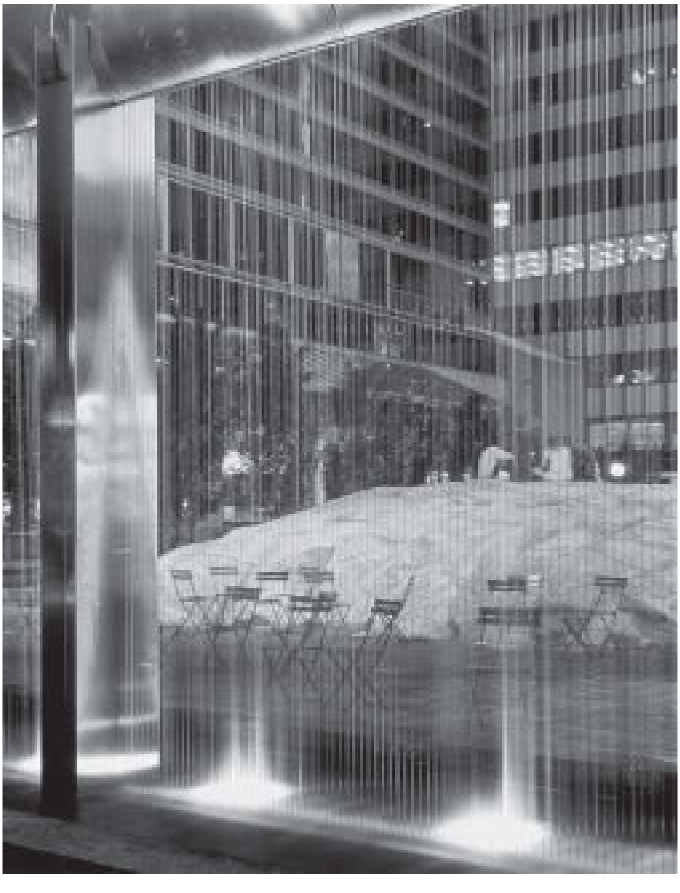
[77] Jane Brown Gillette, "Under Cover," *Landscape Architecture* 86, no. 7 (July 1996): 26–31.

[78] Ibid., 29–30.



35. Site plan, Village of Yorkville Park, *Toronto, Canada, by Martha Schwartz, David Meyer, Ken Smith, 1991–96 (plan: courtesy of Ken Smith)*



36. Icicle fountain, Village of Yorkville Park, *Toronto, Canada, by Martha Schwartz, David Meyer, Ken Smith, 1991–96. The experiences of each ecosystem are compressed and, given this spatial compression, the characteristic features and phenomena that differentiated them are exaggerated and magnified. Urban infrastructural systems are relied upon to create these environmental simulations, such as "a rain current/icicle fountain" and "slotted stainless steel fog rods" that are related to Van Valkenburgh's ice fountains and Walker's fog fountains, respectively. (photo: courtesy of Ken Smith and photographer Steven Evans)*

Walker's intended message was only one of the messages conveyed by the *Ground Cover* installation. Another message, relevant to the issues discussed here, is that environmental agendas and experiences transcend single formal languages. Even a "minimalist garden without walls" has the potential to encode stories about impact of human activity on the land. The third story underscores the differences between *Village of Yorkville Park* and *Ground Cover.* While it may be true that landscape architect—designed parks and gardens cover a miniscule portion of the earth's surface, the percentage of the human population that experiences those parks and gardens is undoubtedly larger than .02 percent. How does the experience of those parks and gardens shape the human population's knowledge of, values about, and expectations for nature in the other 99.98 percent of the earth's surface? If the goals of environmentally conscious designers include not only reinforcing the health of a region's ecosystem, but also inculcating a sense of empathy between humans and the natural world, then even .02 percent of the earth's surface can have large environmental repercussions.

Still, *Village of Yorkville Park* and, to a lesser extent given its short existence and installation status, *Ground Cover,* represent a type of work that exploits the hardened surface of a minimalist garden not simply to make the landscape visible, but to raise ecological experience to the status of art and aesthetic experience. The emphatic flatness of *Village of Yorkville Park*'s surface makes the constructed outcrop of a seven-hundred-ton rock fragment in the center of the elongated park (Fig. 37) all the more powerful, conceptually and experientially, prompting one to ponder the contrast between uplift and foundation, the ephemeral and the enduring, the instantaneousness and the endlessness of deep time in nature.

Like many other contemporary designers who have been experimenting with ways to give form to their culture's environmental values, Schwartz, Meyer, and Smith looked to the experience of the environment as a bridge between science and art, ecology and design. To give the landscape significant presence, they relied on form, movement in space, and temporal fluctuations to create an environment that engages those who encounter it. Unlike some of their contemporaries intent on formal inventions using forms and spaces created by natural processes, *Yorkville Park*'s designers concentrated on the aspects of nature that would evoke a sense of wonder in humans—its simultaneous ephemerality and grandeur, its infinite variety, and its phenomenal moments when light, air, and matter interact to construct an aesthetic experience. One might argue that this rarefied experience has little to do with ecological design. Would John Dewey think projects like *Village of Yorkville Park* "restore continuity between the refined and intensified forms of experience that are works of art and the everyday events, doings, and sufferings that are universally recognized to constitute experience"?[79] If so, aesthetic experience as a tool for engendering environmental empathy might be considered more fully by all ecological designers.

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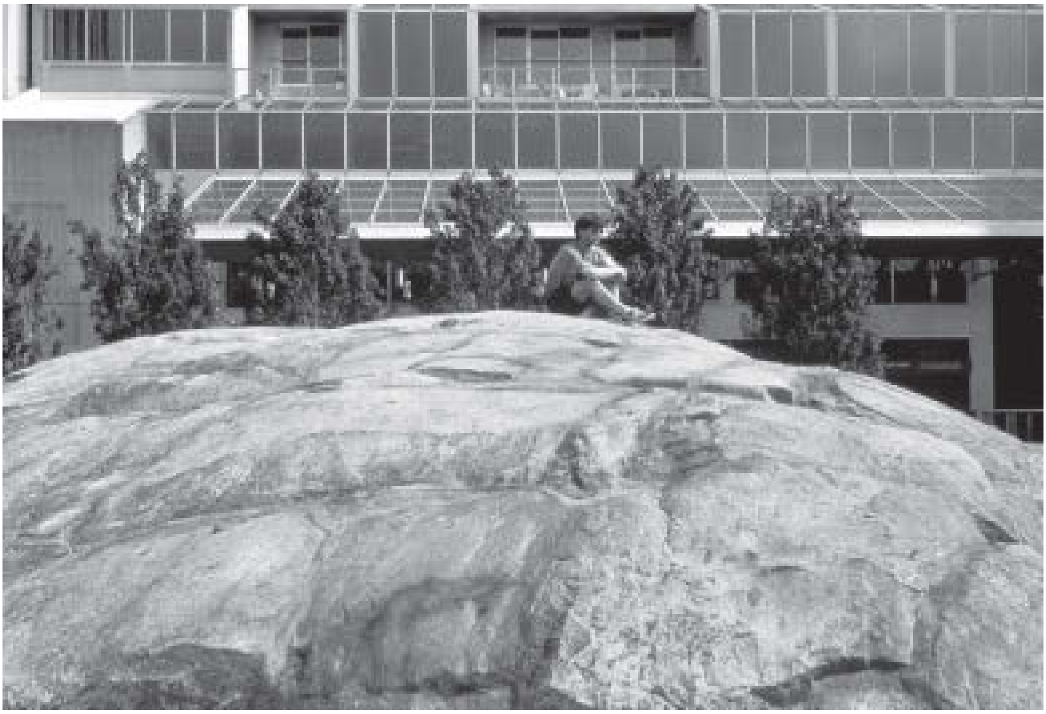
[79] Dewey, *Art as Experience,* 3.



37. Rock outcrop, Village of Yorkville Park, *Toronto, Canada, by Martha Schwartz, David Meyer, Ken Smith, 1991–96 (photo: courtesy of Ken Smith and photographer Steven Evans)*

Reflections and Projections of an Unfinished Project

Post–Earth Day ecological environmentalism profoundly altered American landscape architecture. The profession grew exponentially, dozens of new academic programs began, and new types of commissions became available.[80] The design process changed, as site analysis became increasingly systematized and emphasized. Tensions developed between ecological planners and artists-designers over the degree to which creativity and environmental responsibility were compatible enterprises. Over the past two decades, numerous approaches to reconciling this divide between ecology and design were crafted. The approach chronicled here expanded ecological design to include the formal, the aesthetic, and the constructed. Inspired by environmental artists and others who challenged the modern tenet that artworks are discrete, static objects separate from a detached observer, a new landscape aesthetic emerged. It was characterized by explorations to reveal and register the experience of place, and it relied on a medium and design vocabulary that referenced the materiality and phenomena of the land. These works were set in motion by the cycles and rhythms of human life and natural processes. Bodily experience, movement in space, fluctuating characters, and temporal considerations defined this type of landscape architectural practice.

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[80] Between 1957 and 1966, the number of ASLA members doubled and the number of landscape architecture students tripled. *Landscape Architecture* 48, no. 3 (April 1958): 169; *Landscape Architecture* 57, no. 1 (October 1966): 8. The ASLA currently estimates there are 30,000 practicing landscape architects in the United States, a tenfold increase since the mid-1950s.

The designer's heightened role as the perceiver of site established a reliance on personal experience as a filter for editing and interpreting existing conditions to create works of considerable aesthetic power and invention. This role also raises questions about the audience for these works and the accessibility of the designer's interpretation. If the phenomenology of landscape architecture results in built works that only reveal a designer's personal interpretation of a place or his or her private reveries, the significant role for landscape architecture as the art of creating a meaningful, lasting public realm must be called into question.[81] But if, on the other hand, the phenomenology of landscape architecture taps into the concrete experience of a place by its citizens and if those experiences intermingle cyclical natural processes with the rhythms of collective social life, then this type of built work can redefine what it means to be part of the environment. The works described in this essay have done just that. Instead of an environment that is a surround—an "out there" separate from "here"—these works create an awareness that the ecological environment is *here,* flowing in and through human life and constructions. By constructing aesthetic experiences that foster a sense of being at home in the world, of feeling that nature's rhythms overlap with the daily routines in a community, landscape architects can aspire to achieve what Norberg-Schulz stated was the goal of design—to create places that allow one to dwell in the world.[82]

This chain of events—from perceiving and revealing a landscape's essential structure and character, to creating an aesthetic experience of that environment, to fostering a sense of belonging and understanding—provides a landscape architect with two important missions as an environmentalist. The more commonly accepted mission is that of reflection. The works of a landscape architect reflect existing environmental values through siting, formal gestures, and their relationship to their ecological and cultural contexts. Another mission, implied in the works reviewed here, is that of projection. Certain works of landscape architecture that give rise to collective aesthetic experiences might engender more mature ecological environmental consciousness. This is not a new idea, specific to late-twentieth-century phenomenological thought or landscape design. Lawrence Buell described a similar notion when he stated that "the dominance of aesthetic considerations does not imply ethical anesthesia. As Aldo Leopold was later to observe in his essay "The Conservation Esthetic," "[T]he cultivation of a noncomplacent bonding to nature at the aesthetic level is one of the paths to developing mature environmental concern."[83] By extension, giving significant form and meaning to ecological processes through the making of landscape experiences has laudable goals—to foster design practices that engender more mature understandings of humanity's interdependence with nature, that stir ethical as well as aesthetic debates, and that do not sacrifice significant landscape form in the name of environmentalism.

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[81] See Terry Eagleton, *Literary Theory: An Introduction* (Minneapolis: University of Minnesota Press, 1983), 54–90, for a reasoned criticism of phenomenology's intention as well as its weaknesses. In particular, he addresses the antihistoricism of much phenomenological thought, in that it ignores all that is "beyond our immediate experience" or, in other words, all that is part of a larger shared cultural tradition.

[82] "Architecture means to visualize the 'genius locii,' and the task of the architect is to create meaningful places, whereby he helps man to dwell." Norberg-Schulz, *Genius Loci,* 5.

[83] Lawrence Buell, *The Environmental Imagination* (Cambridge, Mass.: Harvard University Press, 1995), 121.

Environmentalism in Japanese Gardens

Taiichi Ito and Mieko Kawarada

Japanese gardens have adhered to their landscape style since their birth as *shindenzukuri* gardens in the Heian period (794–1192).[1] Unlike English landscape gardens in the picturesque style, Japanese gardens are relatively small in scale, and their miniature and symbolic landscapes, such as the later *karesansui,* or dry gardens, are maintained with intensive care. Their design was intended to fulfill a longing for isolated scenic places, such as oceanfront or alpine landscapes. In short, Japanese gardens are completely removed from recent ecological landscape design concepts, despite their natural appearance.

During the eleventh century, when Japanese nobles became conscious of their own culture as they rid themselves of Chinese influences, large differences began to appear between existing suburban *shindenzukuri* gardens and later Japanese gardens. Nature-oriented design and activities occurring in and around the former gardens were more relevant to the development of an awareness of the surrounding environment than design and activities in later ones. This paper first discusses, with the help of a database of *waka* poems, relationships between the garden in the Toba Imperial Villa, constructed in the Heian period, and its surrounding environment by shedding light upon informal activities of noblemen. Then, design and activities found in later Japanese gardens are examined by focusing on the role of their boundaries. By contrast, environmental characteristics of gardens in the Heian period are clarified, yielding insight into the division of modern landscape architecture into fine art and ecology. For instance, activities such as cultural interpretation are recommended as an approach for bridging the gap between garden art and the surrounding environment.

The Heian Period and Its Gardens

The Heian period started in 794 when the capital Heian-kyo was constructed in the Kyoto Basin. Heian-kyo was laid out over a rectangle of 4,499 meters from east to west and

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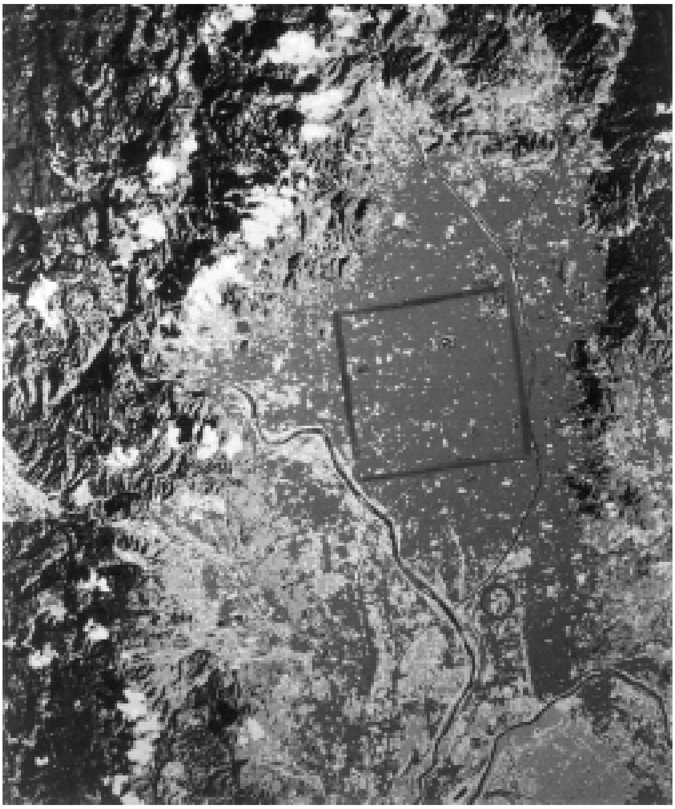
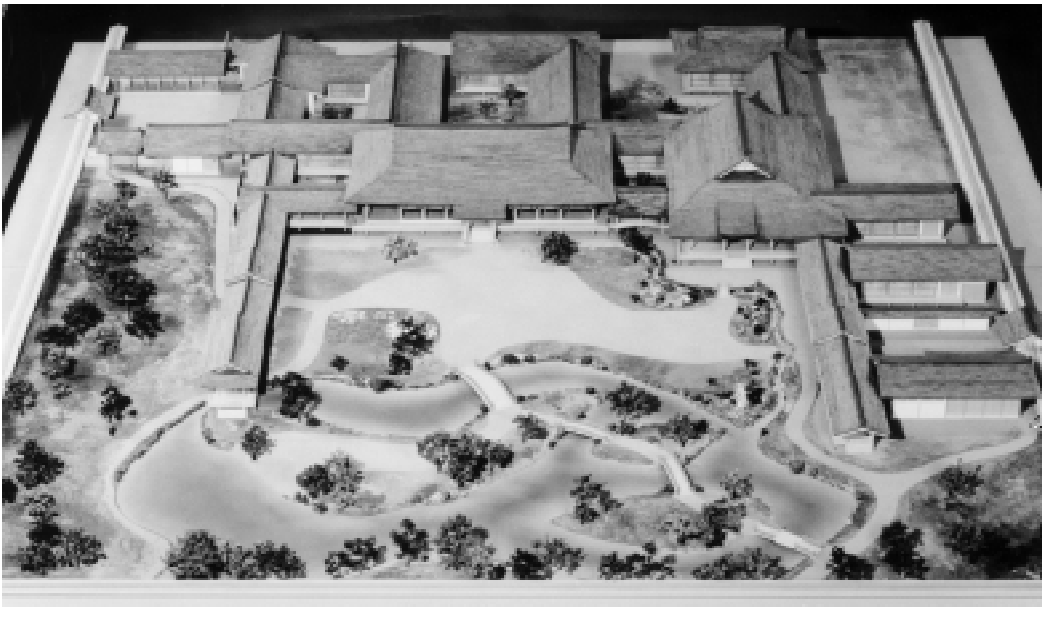
[1] Two types of gardens prevailed in the Heian period—*shindenzukuri,* an architectural style of the aristocratic residences, and *jodo-shiki,* or Pure Land Buddhist style. While the former was attached to a nobleman's mansion on the southern side, the latter was first constructed as a part of the Pure Land Buddhist Temple as a representation of paradise in the afterlife. Some aristocrats, however, converted their residences into temples, as was the case with the preserved Uji Byodo-in Temple, with the expectation of spending their afterlives in the Pure Land. Though the meanings of these two garden types are different, they share many common landscapes.



1. Satellite map of Kyoto with the boundaries of Heian-kyo (square) and the Toba Imperial Villa (circle) (photo: from the Landsat 5 on 5 June 1985, processed by Taiichi Ito)



2. Model of shindenzukuri *architecture and garden (photo: courtesy of the National History and Folklore Museum, Chiba)*

5,230 meters from south to north (Fig. 1). The planning of Heian-kyo city followed the model of the Chinese capital of Ch'angan, except for its city walls.[2] During the Heian period, Heian-kyo's population grew to 200,000 inhabitants—the first urban experience in the history of Japan. Urbanization inclined educated residents to appreciate the surrounding rural environment and nature-oriented arts like landscape paintings and poems about the love for rural landscapes.

Potted plants like bonsai also became popular as a substitute to nature, since dwarfed trees reminded urbanites of an alpine environment. Such potted plants were also used for *senzai-awase,* a contest in which aristocrats competed at arranging wild plants and then composing *waka* poems in praise of their designs. Outdoor activities that reflected a longing for nature—viewing cherry blossoms in the spring, the moon in the fall, and the snow in the winter—also became popular among aristocrats and government officials in Heian-kyo during the Heian period.[3]

Noblemen preferred their *shindenzukuri* houses and gardens to be on sites where springs could be found. Since Heian-kyo was established over an alluvial fan on a south-facing slope, springs were readily available. Given the city's topography, the base of a typical square residential site (120 m by 120 m) dropped by one meter, enabling noblemen to construct a *shindenzukuri* garden with a small waterfall or a stream flowing into a pond. This large pond, supplied by a stream flowing from a spring on the northeastern side of the estate, lay to the south of the house (Fig. 2). Unlike later Japanese gardens that followed abstract design patterns, *shindenzukuri* gardens were sheer reproductions of wild landscapes such as those along a seacoast, according to detailed accounts in the *Sakuteiki,* the oldest garden treatise.[4] In other words, these gardens were designed according to principles similar to those used for English landscape gardens of the eighteenth century. Scaling techniques had not been invented yet.

Heian-kyo gradually became congested, and finding ideal sites for gardens with springs inside the city limits became difficult even for influential noblemen. Gardens without ponds or streams, called *karesansui,* emerged as a part of *shindenzukuri* gardens and later grew into an independent garden style. As a result, noblemen moved out to the suburbs in search of better residential sites. The burning of the Imperial Palace in 960 accelerated such flight. In 1086, after he had served as one of the most powerful emperors of the Heian period, former emperor Shirakawa (1053–1129) ordered the construction of a villa in the Toba area, about ten kilometers south of the Imperial Palace.

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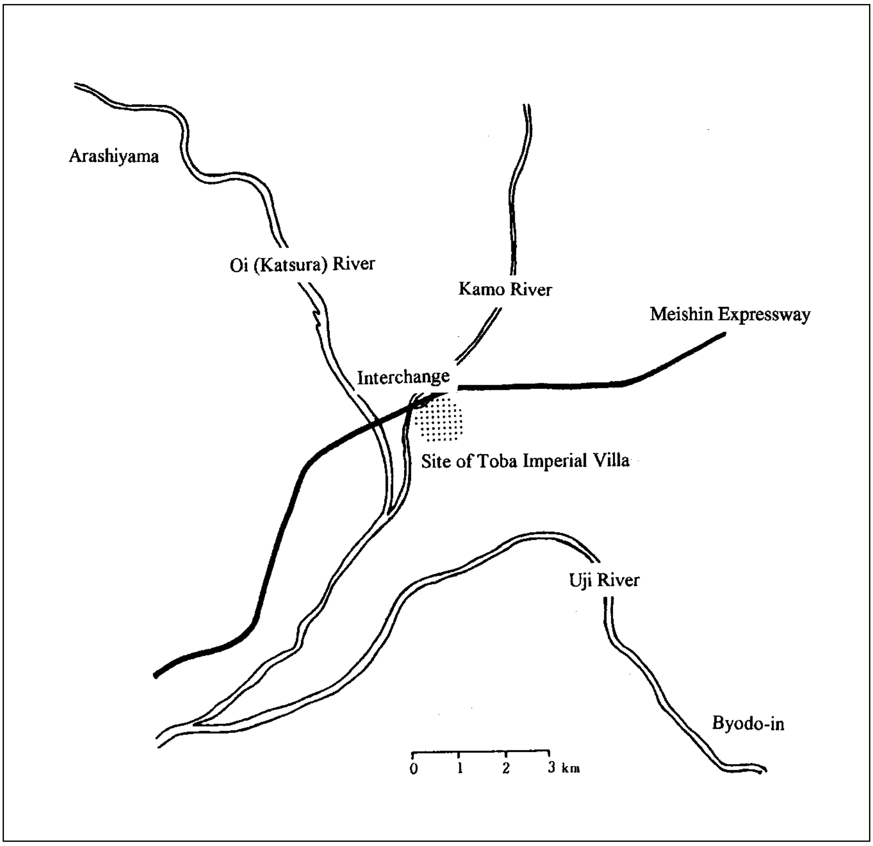
[2] Japanese cities never had surrounding walls. This characteristic facilitated the city's expansion and access into the suburbs but caused permanent urban sprawl problems.

[3] This attitude toward nature in the Heian period is discussed in Yuzuru Shinada, *Toshi no shizenshi* (Natural history in the cities) (Tokyo: Chuo-koron, 1974), 124–36.

[4] The *Sakuteiki* was written by Tachibanano Toshitsuna (1028–1094). He stressed that garden design should reflect the nature of proposed sites. Tan Tanaka discussed the relationships between the design principles in the *Sakuteiki* and ancient gardens in "Early Japanese Horticultural Treatises and Pure Land Buddhist Style: Sakuteiki and Its Background in Ancient Japan and China," *Garden History: Issues, Approaches, Methods* (Washington, D.C.: Dumbarton Oaks, 1992), 79–95.



3. Map of the Toba Imperial Villa and vicinity

Toba Imperial Villa

Unfortunately, none of the *shindenzukuri* gardens have been preserved until today. This is partly because the gardens were too difficult to distinguish from the surrounding environment once their precious decorative stones and other valuable elements had been removed. Fortunately, the garden of the Toba Imperial Villa, often recognized as the grandest of the *shindenzukuri* gardens, was partially excavated and well documented.[5] Shirakawa began the construction of the villa at the junction of the Kamo and Oi Rivers on the southern outskirts of Kyoto (Fig. 3). He chose this site for two main reasons. First, the two merging rivers supplied abundant water and an open landscape. Second, Toba had a port and functioned as a main gateway for those visiting Heian-kyo by boat. Toba's site thus satisfied Shirakawa's geopolitical strategies as well as his scenic desires.

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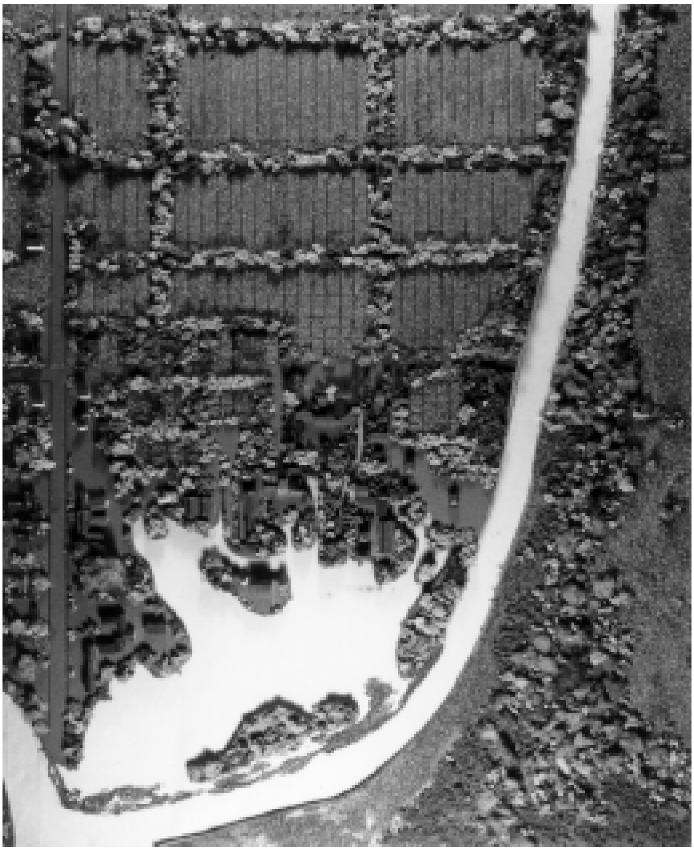
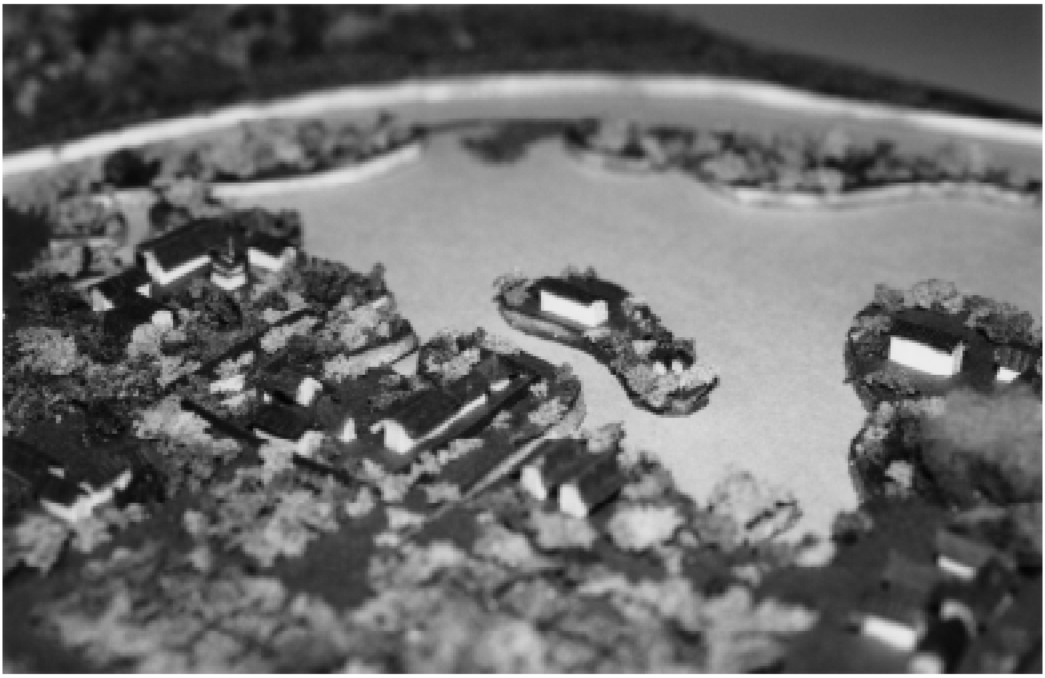
[5] Basic research on the Toba Imperial Villa is found in Osamu Mori, "Toba rikyu teien no kenkyu" (Study on the garden of Toba imperial villa), *Zoen Zasshi* (Journal of the Japanese Institute of Landscape Architecture) 5, no. 2 (1938): 90–102.



4. Bird's-eye view of the Toba Imperial Villa and its surroundings (model by Mieko Kawarada)

The original area of the villa extended 960 meters from east to west and 720 meters from south to north. While this was already an impressive size, the former emperor Toba (1103–1156) further expanded the estate upon a rectangular area 1,500 meters by 1,300 meters. Taking advantage of its location on the swamp, Shirakawa made a huge pond (600 m by 800 m and 2.4 m deep) that occupied sixty percent of the site. The neighboring Kamo River supplied abundant water and easy access outside the villa, so the buildings were constructed mainly at the northern end of the property. The buildings were divided into six units, each consisting of an inner-villa and a ceremonial hall.

Archaeological excavations were triggered by the construction of the Meishin Expressway in the mid 1950s. Though the South Kyoto interchange was built on the area of the Toba villa and succeeding development around the interchange made preservation of the villa impossible, the Cultural Assets Protection Bureau of Kyoto City started an excavation project in 1960. Excavation sites have been small and scattered, but archaeologists have achieved a whole picture of the villa by matching their excavations with other historic sources (Figs. 4 and 5).



5. Bird's-eye view of the Toba Imperial Villa from the northwest (model by Mieko Kawarada)

Approach to Garden Activities through Waka

Traditionally, Japanese garden historians rely heavily on information gathered from archaeological excavations, paintings (Fig. 6), and documents, such as diaries, essays, novels, and poems.[6] The analysis of plant remnants, such as seeds and stems, supplies further information on plant materials used in gardens.[7] While excavation results are especially helpful for exploring spatial characteristics, including structure and planting design, diaries and essays often supply certain information on activities in the gardens. Such information, however, is often limited to official and annual events. In order to learn about informal garden-based activities and attitudes toward such activities, we turn our attention to *waka*, thirty-one-syllable Japanese poems, to complement the previous research results. While traditional sources supply us with information on spatial design, *waka* poems reveal some of the feelings experienced by noblemen when engaging in various activities.

A search through a database of 33,711 *waka* poems compiled by the National Japanese Literature Research Institute in Tokyo found sixty-four *waka* poems related to Toba villa.[8]

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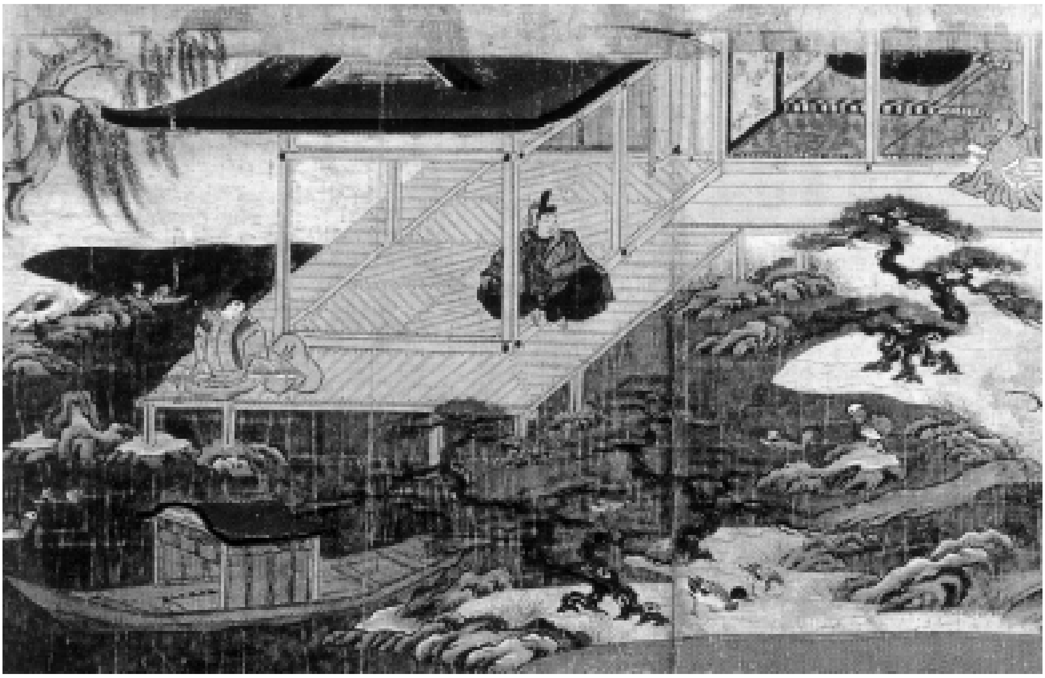
[6] The best source on the *shindenzukuri* garden is Osamu Mori, *Heian jidai* teien *no kenkyu* (A study on the gardens of Heian period) (Kyoto: Kuwana-bunseido, 1945).

[7] Fumio Okada, "A Study on the Tree Composition in the Garden of Toba Imperial Villa" (in Japanese), *Excavation Report of Toba Imperial Villa Ruins* (Kyoto: Culture and Tourism Division of Kyoto City, 1985), 249–56.

[8] The database at the National Japanese Literature Research Institute, compiled in 1995, consists of *waka* poems from twenty-one anthologies. It includes *waka* poems composed between 905 and 1409. Four of the



6. Painting of the Toba Imperial Villa, ca. 1314 (photo: courtesy of Zenrin-ji, Kyoto)

All were composed between 1087 and 1201, with an interruption between 1116 and 1201 caused by political unrest.

These publications correlate with other documents as to the frequency of activities in the villa. Except for those that offer no clue about the season, the majority of *waka* related to the villa were composed about the autumn. Noblemen in the Heian period preferred the autumn and were very active in this season. The most frequently mentioned topic is the villa's tranquil pond, followed by the moon and flower (Fig. 7). Within the poetic dicta of *waka,* "flower" always meant the cherry blossom. A poem from the *Kinyo waka* anthology references two of the most popular *waka* images in its description of a visit to the Toba Imperial Villa by the ex-emperor Horikawa in 1289, during which he praised the cherry blossom using the imagery of the pond:

> *The fragrance of cherry blossoms prevails,*
> *As if it were gushing out from the bottom of the pond.*
> *I will never get tired of observing it,*
> *Till the end of the world.*

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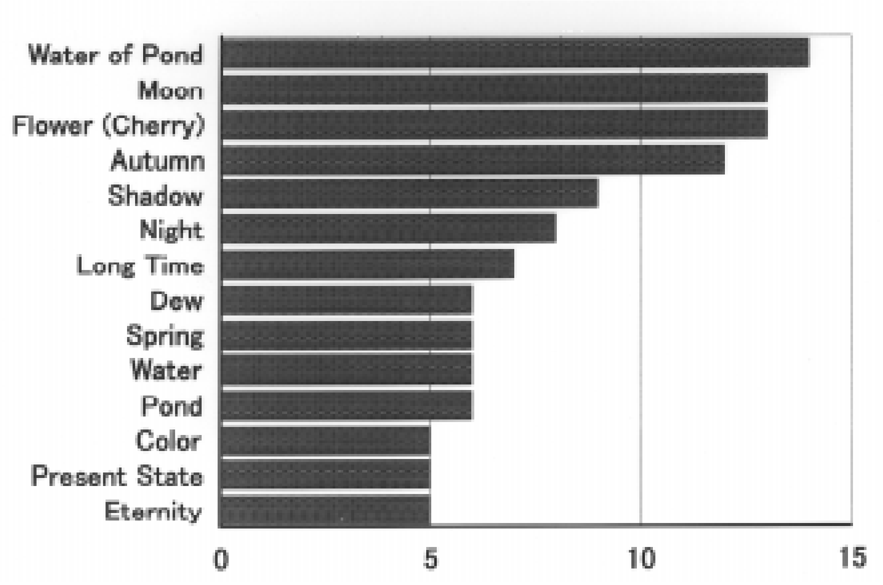
anthologies were exempted from this analysis because they were compiled before the construction of the Toba Imperial Villa. Mieko Kawarada, "Waka ni miru Toba rikyu teien no riyou keitai" (Activities in Toba Imperial Villa garden as they appeared in *waka* poems) (master's thesis, University of Tsukuba, 1996).



7. *Graph showing popular topics of* waka *poems composed at the Toba Imperial Villa, as gleaned from seventeen anthologies in the* waka *database at the National Japanese Literature Research Institute, Tokyo*

The cherry blossoms' beauty certainly enhanced the view of the pond. At the same time, this *waka* indicates that the cherry blossom's subtle scent, which modern Japanese cannot recognize, was highly appreciated. Heian noblemen had a surprisingly keen sense of smell to enjoy such a fragrance.

Many *waka* composers praised the pond's reflection of the moon and trees. Kimizane, a chief counselor of state, composed a *waka* on the reflecting moon in 1094:

As the night approached,
The water on the pond become calm
Enough to reflect
The halcyon autumn moon.

This *waka* presents the pond as a large mirror. In fact, waterfalls in *shindenzukuri* gardens were carefully constructed to avoid forming ripples on the pond's surface.

The presence of common garden trees such as pines, cherries, and weeping willows mentioned in the *waka* poems is confirmed by seeds and pollen analysis as well as by other literary sources.[9] Those species were often found in the garden surroundings. Courtiers preferred native trees to exotic ones as much as they loved native wild flowers.

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[9] Norio Hida, "Heian jidai no shokusai" (Garden Plants in the Heian Period), *Nihon Bijutsu Kogei* (Art and handicraft of Japan), no. 62 (1990): 26–31.

In general, waka poems provide little information about spatial characteristics, although most have been published with an accompanying explanation of the occasion and background of their writing. With the help of such supporting information, a *waka* poem can specify the relative time and location of certain objects. Furthermore, a *waka* poem praising a cherry petal on water hints at the location of cherries near the pond. Former emperor Sutoku wrote,

> *The water surface,*
> *Covered with petals from cherry blossoms nearby,*
> *Is in full bloom*
> *On the flower-like ripple of the pond.*

This *waka* suggests that courtiers loved scattered petals as well as full blooms. Thus, they had a keen sense of natural processes and occasionally used such natural transformations as a metaphor of lost love.

Similarly, praise for a blooming deutzia hedge indicates that the villa was partially bordered by beautiful hedges instead of roofed mud and clay walls, which were often used in later gardens. At the same time, attention to inconspicuous flowers, such as deutzia, suggests that the courtiers preferred modest objects. Interestingly, many *waka* poems praise wild flowers with simple shapes and plain colors in the autumn and ephemeral phenomena related to them.[10] That no *waka* poems mention hunting or fishing, even though such activities were occasionally practiced in the garden, suggests that nobles of the villa preferred subtle symbols and events to hyperbolic ones as the subjects of *waka*.

Activities in and Beyond the Villa

Waka poems composed at the villa support other documentation of garden activities at Toba villa, such as viewing the moon or cherry blossoms, boating, and engaging in *senzai-awase* contests.[11] *Waka* poems seem to indicate, however, that such activities were pursued more enthusiastically in the garden than elsewhere. For example, nobles especially enjoyed viewing the moon by boat with music at night. Boating was not limited to the pond. One *waka* poem by Shirakawa tells of his boat ride up the Oi River, where he praised the autumn leaves at Arashiyama, eleven kilometers away (Fig. 8). Making full use of the villa's easy access to the Kamo and Oi Rivers, noblemen would travel to Arashiyama to view the scarlet maple leaves or down to the Byodo-in Temple, ten kilometers away, to visit the Pure Land Buddhist-style gardens (Fig. 9). Thus, river access not only enabled the creation of the villa's large pond and the water-based activities enjoyed there, but also the expansion of such activities beyond the garden's boundary into the surrounding rural environment.

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[10] Exotic plants with edible fruits or medicinal qualities, such as apricots, were introduced from China in the Nara period (710–794), a time when Japan was under China's strong cultural influence. Therefore, the apricot blossom was more frequently praised than cherries at that time. According to Kazusuke Ogawa, *Sakura-shi* (Cherry: Its culture and epoch) (Tokyo: Hara Shobo, 1998), 20–28, the *Manyo waka* anthology, compiled in the Nara period, has 118 poems referring to apricots and only 42 referring to cherry blossoms. The preference for the cherry blossom in the Heian period symbolized the creation of an original culture in Japan and the ridding of Chinese influences. Hida, "Heian Jidai no shokusai," mentions that the official record for cherry blossom viewing was set in 812.

[11] Saneshige Komaki, ed., *Jonan around the Ruins of Toba Imperial Villa* (in Japanese) (Kyoto: Jonan-gu Shrine, 1967). One of the few activities documented in many *waka* but not mentioned in connection with Toba villa is the *gokusui* banquet, a ceremony in which a *waka* poem had to be composed by the time a tray with a glass of sake wine dispatched from upstream reached each participant sitting along the stream. This banquet seemed popular in the gardens of the Heian period; see Tanaka, "Early Japanese Horticultural Treatises."

Senzai-awase was another popular activity at the villa. It was played by two competing groups of noblemen, who would go out into the fields in search of wildflowers to plant in front of their gardens. During their search, they would also collect insects such as crickets, which they would release on their return to enjoy the insects' chirping. The contest was judged according to the quality of the noblemens' design in planting and of the *waka* poems composed in its praise. *Senzai-awase* was thus the ideal outdoor recreation, or nature game, for mobilizing the five senses as well as the intellect. Such activities also enhanced the connection between the garden and the environment from which it was separated by a wall.

These extended activities depended on the environment surrounding the Toba villa. One of the *waka* poems composed in the Toba villa alludes to its setting:

> *Into this mountain village I moved,*
> *To get rid of this weary city life.*
> *However, a storm has come*
> *And made life more difficult.*

Here, the mountain village is the Toba villa, and the city is the capital, Heian-kyo. This reading, then, indicates that noblemen looked at the environment of the villa as a mountain village, or as an ideal place to live, in spite of its proximity to the capital. This poet is lamenting the arrival of a storm, although such a natural disturbance would still have been preferable to the congestion of the city. *Waka* poems composed at the villa exalt its rural setting, where bird songs and deer callings prevailed. Plants like pampas grass as well as the surrounding paddy fields are also mentioned, indicating that the villa's surrounding rural landscape was influenced by humans.

Tachibana Toshitsuna, the author of the *Sakuteiki,* commented that the view from the Toba Imperial Villa was not very spectacular.[12] But the landscape was not Shirakawa's major concern when selecting the site or the design of the villa; rather, its location at the junction of two rivers was deemed most important. The garden was intended for enjoying the whole environment through nature-oriented activities, several of which took place on the water. The Toba Imperial Villa was designed not only to make full use of a garden, with its large pond, but also to pursue activities beyond its boundary. The *waka* poems document

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[12] This episode is fully discussed by Teiji Itoh, *Space and Illusion in the Japanese Garden* (New York: Weatherhill, 1983).

8. Arashiyama, upstream from the Toba Imperial Villa on the Oi River

9. Byodo-in, completed in 1053, on the Uji River how noblemen cultivated an environmental awareness through such activities and became extremely sensitive to subtle, ephemeral phenomena of each season, especially autumn. In other words, such activities worked as catalysts for increasing environmental awareness, and *waka* poems contributed to the deepening of its interpretation.

Down-Sized Gardens in the Muromachi Period

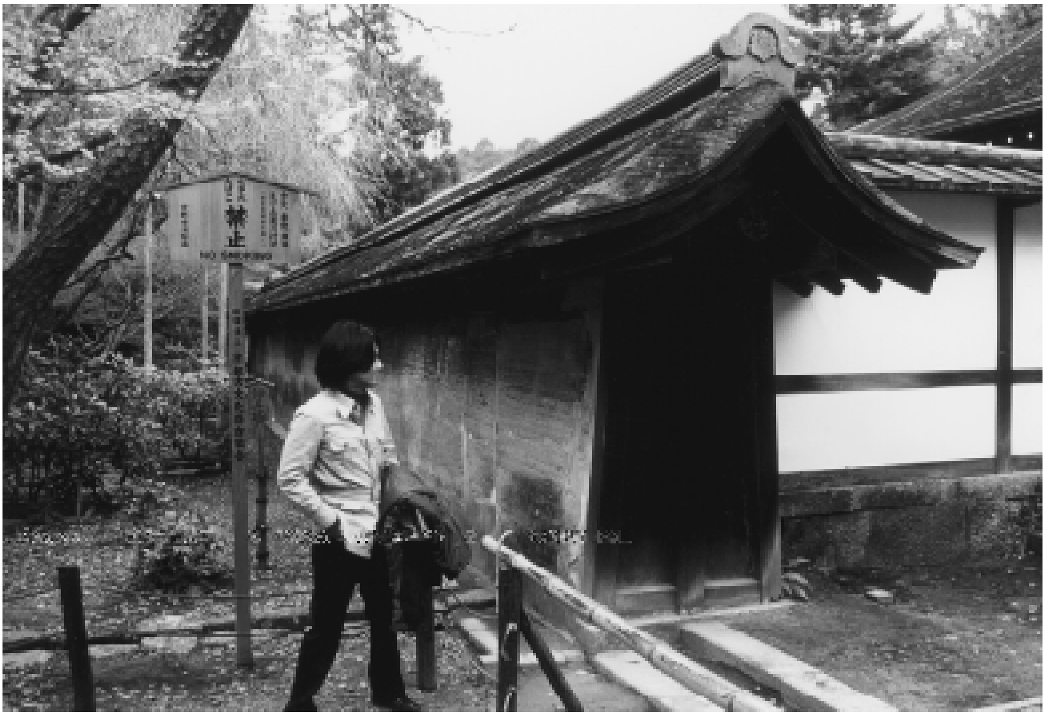
Garden design in the Kamakura period (1192–1337) remained under the strong influence of the preceding Heian period. In the following Muromachi period (1338–1576), however, Japanese garden design evolved in further sophisticated stages. In the fifteenth century, *karesansui* gardens emerged as an independent style, and *roji,* or tea gardens, supplied new ways of enjoying natural scenery. These new design methods were brought about by the rise of political unrest that began during the late Heian period. Warlords, originally in charge of protecting nobles' mansions and temples, gained power in various regions, establishing themselves as independent political forces. Their preference to live in well-guarded residences called *shoin* led to a taste for smaller gardens surrounded by stronger walls than those found in Heian period gardens. Urbanization in the already-congested city of Kyoto accelerated this trend toward smaller walled gardens.

This increasing dependency of gardens on buildings meant a limited relationship with the outside world. Like Islamic gardens in hot and dry climates, gardens in the Muromachi period were treated as separate spaces from the world beyond their walls, confining views to those that could only be seen over their walls (Fig. 10). At the same time, many activities that could be found both inside and outside the boundaries of the *shindenzukuri* garden disappeared. Composing *waka* poems, for instance, was replaced by contemplating the garden.

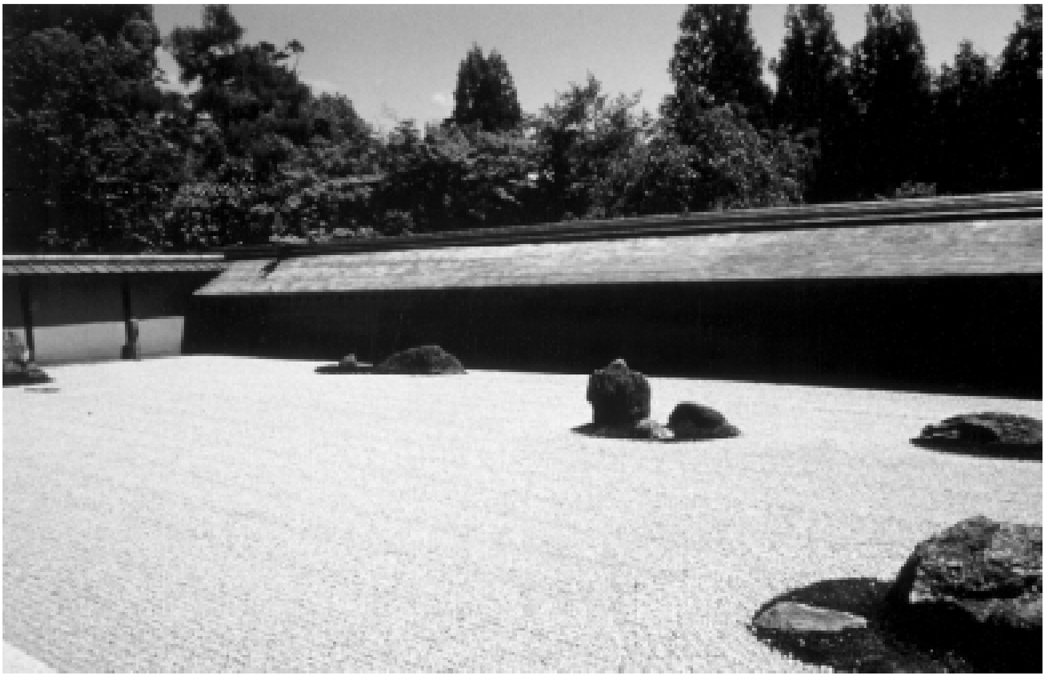
Gardens became designed to offer a view from given places in the buildings to which they belonged (Fig. 11). This concentration on a visual experience of the landscape while forsaking involvement in garden activities facilitated the development of gardens into purely visual objects. *Karesansui,* which had only been an adaptive design element in *shindenzukuri* gardens in dry settings, now became an independent garden style. Further, the development of symbolic expressions related to Zen Buddhism as well as the use of such materials as white sand and stones contributed to the evolution of gardens into a fine art.

While the *karesansui* garden is rather static and has only fixed viewpoints, *roji,* the other garden style developed during the late Muromachi period, is designed for motion, with careful consideration given to a sequential discovery of landscapes. *Roji* gardens sought to reconstruct the atmosphere of mountain villages, the result of further urbanization that engendered a longing among warlords for rural life. Such a demand, however, created serious dilemmas, since they had to construct their gardens under less preferable conditions on small sites without a spring or view.

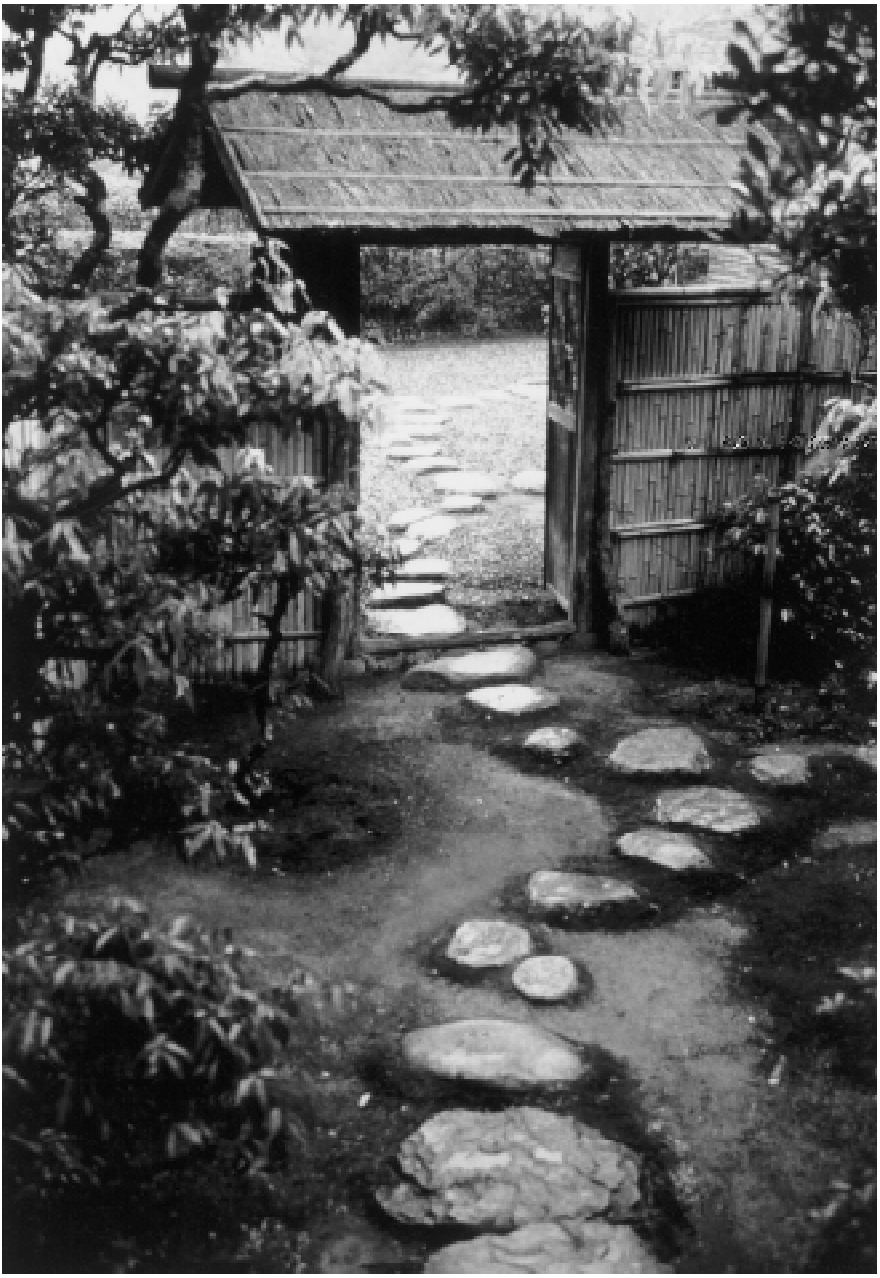
The warlords satisfied the space they craved by providing a series of spatial experiences through carefully constructed sequential landscapes along the footpath to the teahouse



10. Shingled wall of karesansui *garden at Ryoan-ji, Kyoto. The roof was covered with tiles until 1996.*



11. Karesansui *garden, constructed in 1499, Ryoan-ji, Kyoto*



12. Roji *garden, constructed in 1790, Kanden-an, Matsue*

13. Kaiyo-shiki, or strolling garden, constructed in 1709, Rikugi-en, Tokyo

14. Tea house, Rikugi-en, Tokyo

(Fig. 12). Thus, landscape diversity was attained in the small garden, but fences inside the garden further isolated it from view beyond its boundary. *Roji* gardens are not only smaller than *karesansui* gardens in scale but also conducive to mental isolation from their surroundings. While such introspective and defensive landscapes must have provided mental tranquility and escape from the real world during an unstable era, they introduced further sophistication in design techniques for gardens as a fine art. They must also have generated a sense of indifference to the environment and the lives of ordinary people beyond their walls.

Revival of Large-Scale Gardens in the Edo Period

This inclination toward smaller spaces was partially due to a long period of struggle for power among warlords after the Heian period. Political unrest came to an end in the early seventeenth century, when the Tokugawa shogunate unified Japan. The Edo period (1603–1867), named after its capital, started with the establishment of Edo (later Tokyo) as its de facto capital. This period brought more than 260 years of political stability, long absent since the Heian period, and isolated Japanese society from international contact. This isolation helped to develop the cultural uniqueness that is found in Japanese gardens.

The political stability and prosperity among the shogun and daimyo, or feudal lords, made the construction of large-scale gardens possible again. Moreover, daimyo gardens incorporated both the *karesansui* and *roji* design techniques that had developed during the Muromachi and the succeeding Momoyama periods into a consolidated garden type. Even forests were included to create a mountain atmosphere. Two new garden techniques also developed during the Edo period—*kaiyu-shiki,* a strolling or circuit style, and *shakkei,* the use of borrowed scenery.[13] Both are excellent techniques from the standpoint of design, and they added considerable diversity to the garden landscape.

The strolling garden is designed to enjoy sequential views along a footpath that circles around the garden (Fig. 13). Because it is viewed from different points along the route, the strolling garden is more difficult to design than the *roji* garden, with its simple linear corridor. To diversify the views along the circling footpath, a variety of eye-catchers, such as stone lanterns and water basins originally used in *roji* gardens, were introduced systematically. Though a sense of unified design was difficult to achieve in the daimyo garden, with its diversified design techniques and materials, the rural atmosphere of the mountain village was still dominant (Fig. 14)—a preference reminiscent of the Petit Trianon at Versailles.

Well-known sceneries praised in popular books by famous poets or writers were also reproduced in the miniature garden. For example, a grass-covered mound in the garden might represent Mount Fuji (Fig. 15). Such symbolic representation of specific sceneries required a command of the corresponding literature by visitors. The daimyo became enthusiastic about constructions of such symbolic scenes of nature derived from literary sources, which allowed them to enjoy well-known sites in remote parts of Japan or China without

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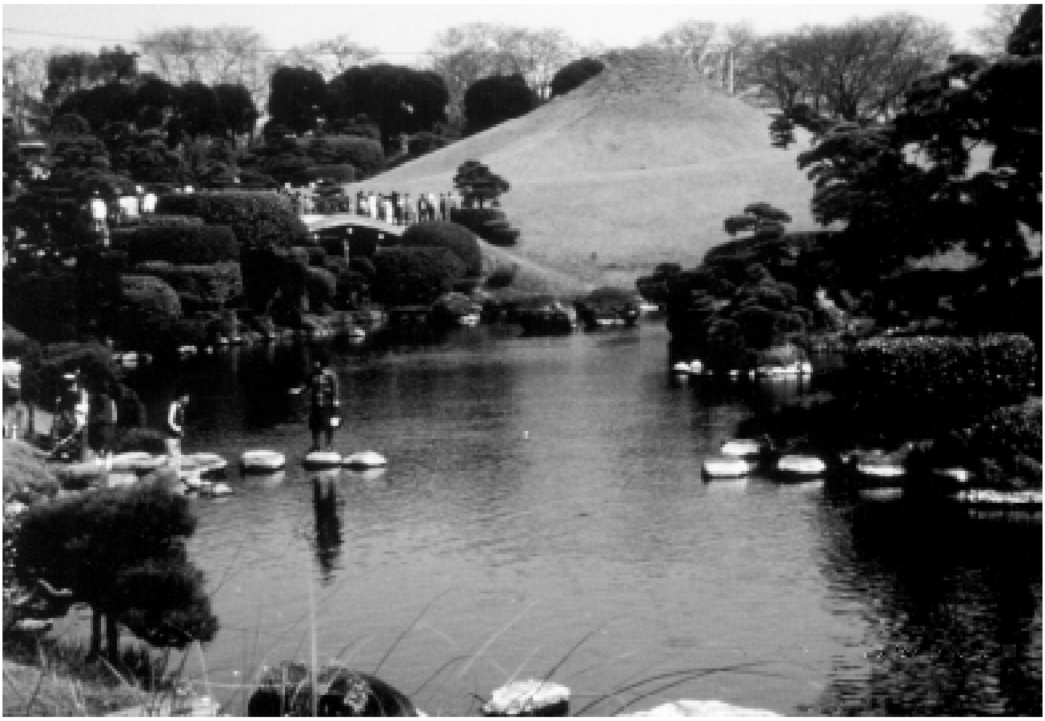
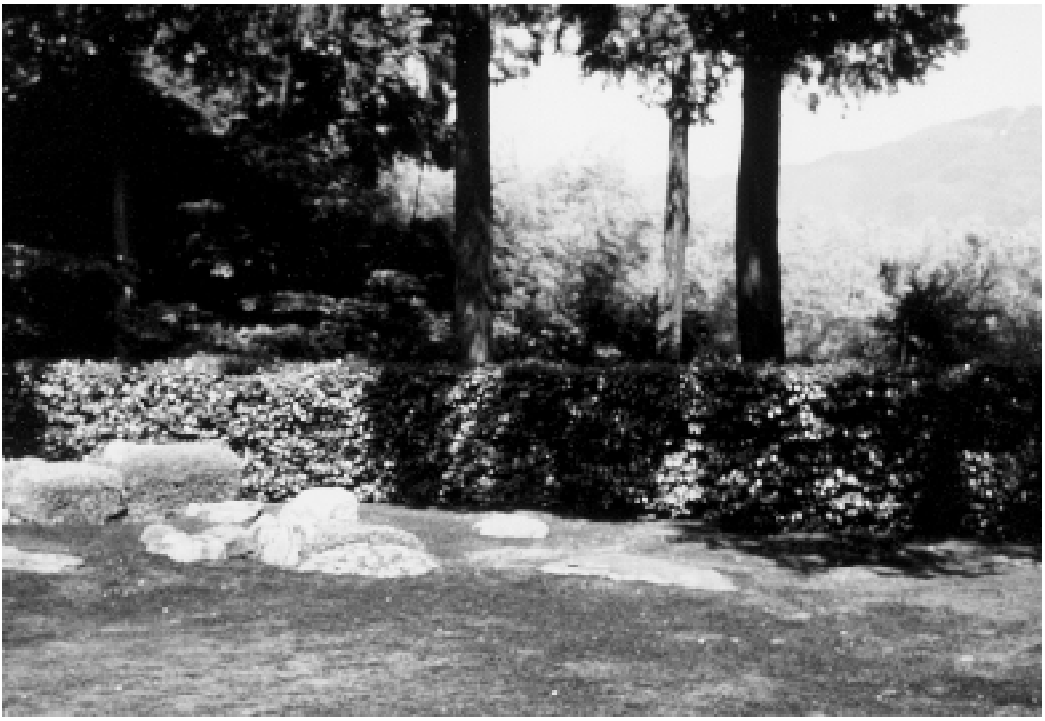
[13] The meaning of *shakkei* is discussed by Teiji Itoh in, ibid., and the technical development of *shakkei* is detailed in Makoto Motonaka, *Shakkei* (in Japanese) (Tokyo: Shibun-do, 1997).



15. Miniature Mount Fuji, constructed in 1671, Suizen-ji Garden, Kumamoto



16. Shakkei *garden design at Entsu-ji with Mount Hiei, constructed in 1678, Kyoto* having to take the trouble to visit the real sites.

Shakkei, the other popular garden design technique, was fully developed during the Edo period after first being used in the fourteenth century to bring distant views into garden settings (Fig. 16). Like the careful orchestration involved in the sequential landscape control methods of the strolling garden, *shakkei* selectively used such framing devices as fences or trees to present a desirable distant background view and to conceal unattractive middle-ground landscapes. In other words, the *shakkei* technique enabled designers not only to bring a framed background view such as distant mountains into the garden as a design element, but also to create a screen to conceal the surrounding urban environment. Moreover, the borrowed scenery offered a visual experience of the distant landscape that could not be inspected by the daimyo or his guests. This framing technique further added visual diversity to the fine art of gardening, but it was vulnerable to the various changes in the environment that accompanied urbanization.

Activities in the Daimyo Garden

Yozaburo Shirahata, a historian of landscape culture, claims that Japanese garden historians tend to disregard the daimyo garden as a fine art from the standpoint of visual quality.[14] He argues that daimyo gardens should be evaluated according to the diverse activities that took place in them. Certainly, garden activities were as numerous as the diverse landscapes in the daimyo garden. Both formal and informal garden parties were very common. For important parties, the owner might place kiosks in the garden representing storefronts of a mountain village, and his vassals would play the roles of local merchants and farmers. Practically, the garden was acknowledged as a theatrical scene representing a distant mountain village and its people, introducing a virtual reality. The preference for the rural scenery of the mountain village, a legacy of the courtiers of the Heian period, and such a rural atmosphere would remain a major theme of Japanese gardens to this day.

In the daimyo garden, all activities were contained in the garden. Use of the environment beyond the garden's boundary, which the Heian aristocrats had enjoyed, was not restored in the gardens of the Edo period, partly because of the still-defensive attitudes of the warlords. Moreover, space limitations brought on by urbanization forced the designer to contain every rural site within the garden boundary. Self-containment of the daimyo garden was deemed vital enough to include even a precinct of the local shrine.

Daimyo gardens were also influenced by *waka* poems. Rikugi-en, one of the best daimyo gardens preserved in Tokyo, is also called "the garden for *waka.*" Its garden consists of eighty-eight sights named after popular settings praised by *waka* poems. One such site on the southern shore of the pond is named after a famous *waka* from the *Shin Kokin waka* anthology compiled in 1205. It describes the desolate evening scenery of Wakanoura Bay.

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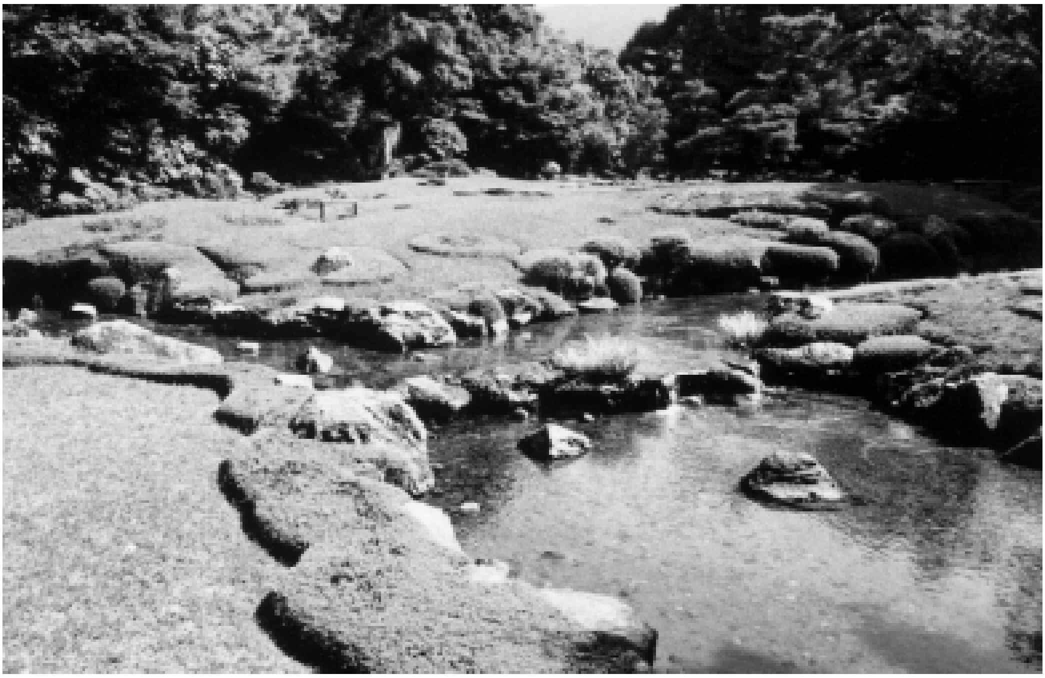
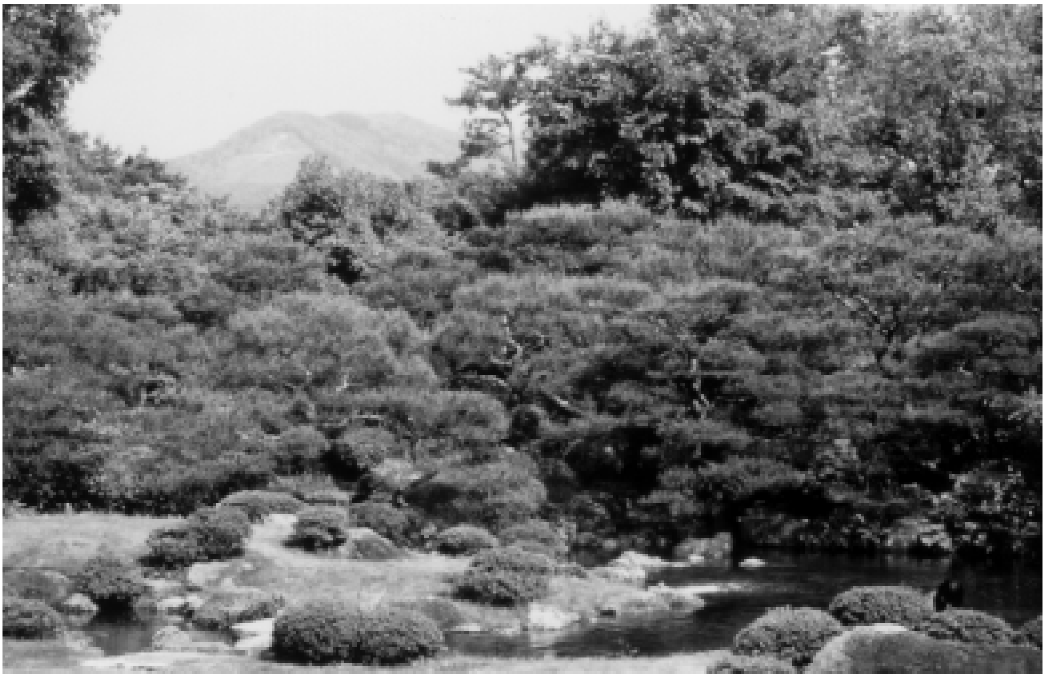
[14] Yozaburo Shirahata, *Daimyo Teien* (Daimyo gardens) (Tokyo: Kodansha, 1997).



17. Shakkei *reduced in size by foliage at Murin-an Garden, constructed in 1896, Kyoto*



18. Shakkei *reduced in size by foliage at Seifu-so Garden, constructed in 1913, Kyoto*

Into Wakanoura
The tide is filling with the moon rise.
A whooping crane deepens
The night with solitary voice.

Japanese love this *waka* because the whooping of a crane effectively expresses the quietness of Wakanoura. Such a solitary atmosphere is exactly what the Japanese garden designer expected of the garden. Visitors familiar with this *waka* can easily conjure this image of Wakanoura Bay, even if they have not visited the original place.

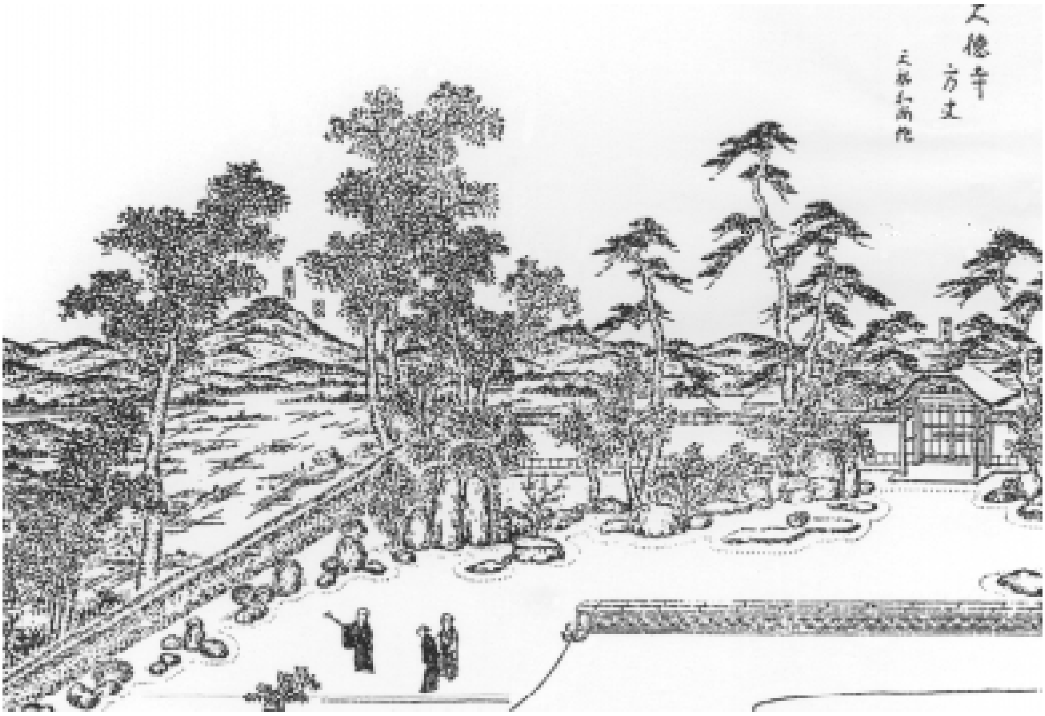
The daimyo and the aristocrat of the *shindenzukuri* garden enjoyed *waka* poems in very different ways, however. While twelfth-century noblemen composed *waka* poems to enhance their enjoyment of natural phenomena in and beyond the garden, the daimyo designed gardens with dwarfed representations of scenes praised in famous *waka* poems, literary essays, or Chinese poems. This attitude toward the environment stood in complete contrast to the previous one and showed that the daimyo preferred imaginary scenes inspired from literature over real experience.

Shirahata estimates that the number of daimyo gardens in Edo easily exceeded one thousand; therefore, the city of Edo was full of gardens with diversified activities. Despite their numbers, because they were completely hidden by walls, only their owners could enjoy them. Commoners were not allowed to enter them except on special occasions. For such people, images of mansions in daimyo districts were limited to the sight of walls, behind which Japanese garden design seems to have accelerated the detachment of garden owners from their surrounding environment.

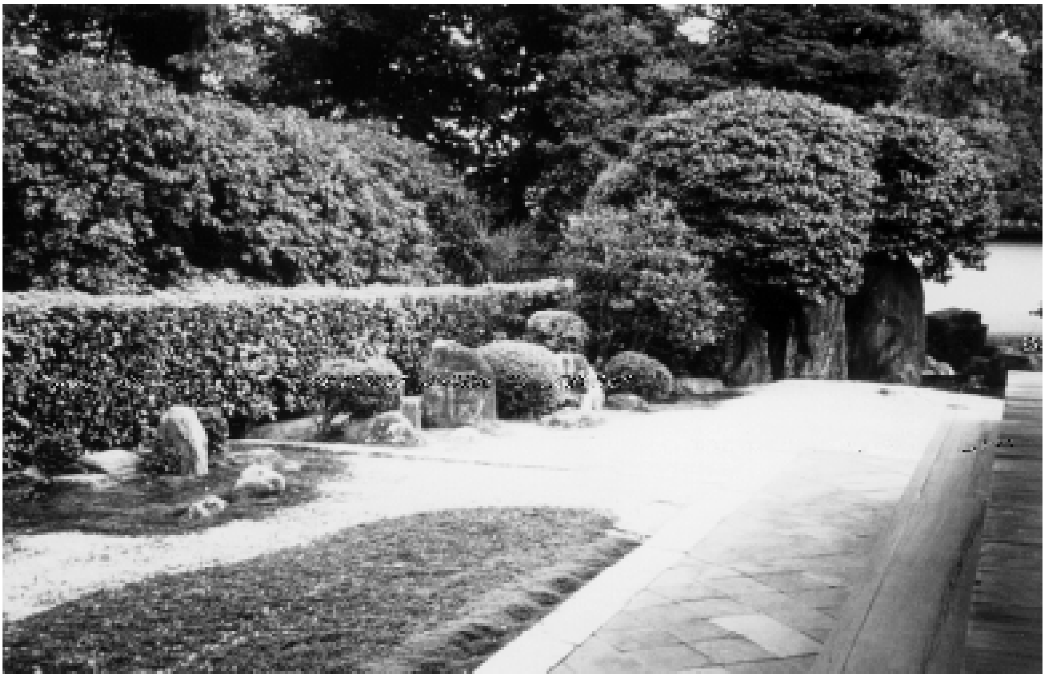
Gardens after the Meiji Era

The start of the Meiji era (1868–1912) corresponded to opening of the country to international influences under Emperor Mutsuhito. The sudden influence of Western culture dramatically changed the urban landscape of Tokyo. Most daimyo gardens were destroyed, though a few were preserved as public parks. A newly emerging bourgeoisie constructed gardens that exhibited European influences. However, the fencing-in of garden estates still has not changed today.

Shakkei, which had become a very popular technique of landscape design during the Edo period, was used in a larger number of gardens during the Meiji era. Maintaining a captured view of a distant landscape became more difficult, however, when estates became surrounded by higher structures of the middle-ground landscape. Obviously owners had no authority to regulate land use beyond their own property. Some owners adapted their *shakkei* gardens to such changes by reducing the size of the landscape frame with growing foliage (Figs. 17 and 18); others completely screened it, abandoning any visual relationship to the distant landscape (Figs. 19 and 20). Thus, garden design became even more alienated from the environment, further stimulating its independent development as a fine art.



19. Drawing of Hojo Garden, Daitoku-ji, Kyoto, with shakkei *in the Edo period (from Rito Akizato,* Miyako Rinsen Meisho Zue *[Pictures of scenic places in Kyoto] [Kyoto: Ogawa Tasaemon, 1799])*



20. Lost shakkei *at the modern Hojo Garden, constructed in 1635, Daitoku-ji, Kyoto*

Karesansui and *roji* gardens have been gaining in popularity nowadays, and garden critics praise them from an artistic standpoint. Their isolation from the surrounding environment, however, may be partly responsible for the indifference modern Japanese (who demonstrate great interest for nature through constant care for their gardens) demonstrate toward the public landscape. In clear contrast to beautiful private gardens, the civic landscape beyond the garden boundary is not cared for at all, and it has turned into an ugly urban landscape.

As time passed, gardens gradually became smaller and more affordable to a larger segment of the population. The majority of Japanese, however, were farmers, who had closer relationships with the natural environment because they depended on it for their survival. Japanese farmers were deeply committed to the communal forests near them for both agricultural production and daily life. The forests had sustained them for hundreds of years by supplying them with fertilizer, food, and fuels. This relationship was broken in the 1950s, when the landscape and land use suddenly changed. First, Japan became more industrialized, and the resulting urban sprawl transformed traditional agricultural fields into residential areas. Second, an increasing dependency on fossil fuels diminished the population's dependency on forests for energy and agricultural production. These two concurrent changes severed the population's spiritual and physical link to the middle-ground landscape, much as the *shakkei* technique had done to the feudal daimyo.

Landscape Architecture and Environmental Awareness

We have reviewed changing relationships between Japanese gardens and the environment beyond the boundary walls by focusing upon both activities and landscapes. First, we have observed how urban dwellers, faced with a loss of immediate contact with nature, had created during the Heian period a culture allowing then to express their attachment to nature in gardens and nature in their surroundings through poems and ritualized courtly activities. Second, activities beyond the boundary were completely abandoned after the Heian period. Later, composing *waka* poems as one among different popular garden activities was revived in the Edo period. However, daimyo owners used *waka* poems as a source for their garden design, while Heian courtiers gained further awareness of the environment by composing *waka* poems derived from the careful observation of nature. This cultural change contributed to the development of a highly symbolic garden art and to visual and literary appreciation substituting itself for an environmental appreciation of gardens. Third, the contrast between garden landscapes and the surroundings became sharper as time passed, and the kind of homogeneity found in the Heian period was never recovered. This contrast was boosted by the further urbanization of surroundings and sophistication of garden art. These two factors fostered an improvement of the *shakkei* technique as a means of making a background landscape into a garden component accentuating the importance of visual culture to the appreciation of nature in gardens. Further urbanization eventually forced garden owners to abandon the idea of borrowing any scenery. This resulted in an escalated isolation of garden spaces as well as a loss of environmental awareness by garden owners of their immediate surroundings.

Alienation from the environment is not limited to garden owners. Masami Kitamura, who did extensive research on forest culture, made an international comparison of forest awareness between the Japanese and Europeans in various cities. He concluded that Japanese urbanites tend to perceive forests in remote mountains as images from mass media instead of a reality because they seldom visit and walk in them.[15] This perception is reminiscent of the daimyo garden's reconstructions of famous scenes from literature.

An even more serious problem grows out of indifference to the nearby environment, or to the middle-ground landscape to borrow the *shakkei* term. Strictly speaking, such middle-ground spaces still exist, but people move through them by car without any interactions with them. The middle-ground landscape is important as a bridge for filling the gap between such distant landscapes as wild forests and such foregrounds as artificial gardens and city parks. Regretfully, the relationship that existed before the 1950s will not be restored until oil resources have been exhausted.

The recent interest in the conservation of nearby communal forests among urban Japanese may be a reaction to the lack of interest for the environment among contemporary Japanese. Some Japanese landscape architects are involved in the ecological rehabilitation of these forests. Restoration of traditional uses, such as firewood gathering and charcoal burning, is an important step toward revitalizing sustainable characteristics of communal forests. They tend, however, to focus on ecological values at the expense of social ones. Even if they successfully restore traditional management techniques in communal forests, there is no market for such products in Japan. Interpretive activities, recognized as an effective approach to raising environmental awareness among the public, are conducted at some city parks and protected communal forests; however, the managers tend to only stress knowledge and values related to ecology.

But cultural approaches akin to those employed by the aristocrats of the Heian period could provide more effective ways of directing attention to subtle environmental phenomena and their interpretation for others. This essay's analysis of *waka* poems from the Heian period suggests that environmental awareness can be enhanced by creative interpretations of a symbolic nature, perhaps far more effectively than restoring native species in a confined space or conducting educational activities. Of course, recovering such spatial homogeneity as could be found in *shindenzukuri* gardens is unrealistic; neither can we afford a huge estate in urban areas any longer. Still, the experience obtained from the immediate environment can be brought back home just as aristocrats in the Heian period did. When they actively engaged one another in different kinds of creative interactions, they were not simply following a pattern of traditional habits of attention to nature. To the contrary, through their activities in gardens and their environs, they were contributing to the development of a cultural appreciation of nature, and they were socially rewarded for their achievements. This is a far cry from the uninspiring educational activities that are proposed in many national parks nowadays.

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[15] Masami Kitamura, "Shinrin no bunka" (Forest culture), *Mori, Hito, Machi-zukuri* (Forest, people, and community development) (Kyoto: Gakugei shuppan, 1993), 49–120.

Thus, in landscape architecture, activities that increase the possibilities of exchanging a sense of wonder are more important for promoting environmental awareness than just creating an ecological appearance. Further research in different historical contexts might help make this conviction more precise and allow contemporary landscape architects to answer the challenge that such a cultural directive poses—whether landscape architecture is viewed as an art or as applied ecological engineering.

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